

looks like one of typho-malaria, but it is not so; the extremes of temperature were largely due to nervousness.

With reference to the incompatibility of typhoid and tuberculosis, I unfortunately cannot furnish any charts but my experience is very positively on the side that tubercular trouble does not furnish immunity. I have, within the last week, run across two cases of tuber-

In conclusion, Gentlemen, I do not feel that I need make any apology for dwelling at such length on the subject of typhoid fever, nor in offering the remarks I make to-day. I feel that I have been able to present you a series of charts of unusual interest, and I trust that their characteristics will be fixed upon your minds and be of service to you in your work in the future. I wish especially to emphasize the point that

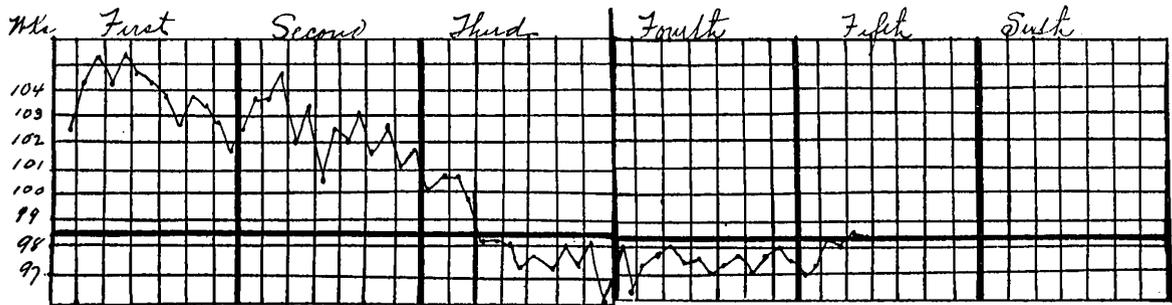


CHART XIV. Typhoid with Sub-normal Temperature.

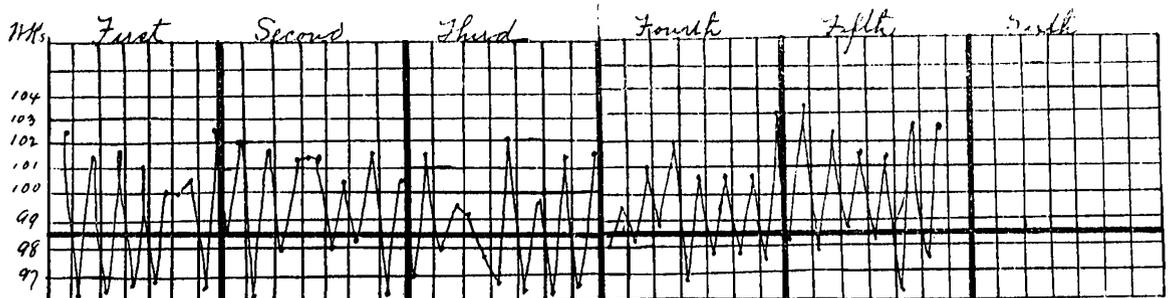


CHART XV. Tuberculosis.

cular trouble that I brought through typhoid two years ago, and I have many such in mind. In fact, I have one well-marked case, just beginning, under my observation at the Methodist Hospital at the present time.

I wish now to call your attention to the frequency with which the temperature runs *sub-normal* during the stage of convalescence.

This point is beautifully illustrated in Chart No. II and is well shown in Chart XIV.

In each case, as you will see, the temperature ran down to 95.5°, and continued subnormal for a week or ten days. This stage calls for stimulation, and requires care that undue strain should not be put upon the heart. It is usually accompanied by profuse sweating and occasionally we see *sudamina*.

This is something that I have seen but sparingly mentioned in books, except in Flint, where he says, "At certain periods the heat may not exceed, and it may often fall below, the standard of health." This is an observation in the third edition of Flint, published in 1868. I have not noticed any mention of it in any other authority; but I have probably overlooked the point; at any rate, it has frequently occurred in my experience.

And now I wish to show you Chart XV, as illustrative of the fact mentioned by Osler that acute tuberculosis is not infrequently mistaken for typhoid fever.

You will observe the daily changes of temperature, but you will also notice how evenly these changes run.

typhoid does abort, and that it may also be present and the clinical thermometer show that the patient's temperature is normal or even sub-normal.

Original Articles.

THE BACKWARD DISPLACEMENTS OF THE UTERUS.

BY C. P. STRONG, M.D.

THE treatment of retroversion or backward displacements of the uterus can be very broadly divided into those cases in which retroversions require treatment and those which do not. Many a patient presents herself for examination in which none of the symptoms are dependent upon the retroversion. I think a retroversion, unless accompanied by a descent of the uterus, or unless accompanied by adhesions or displacements of the tubes and ovaries, is not one which necessarily requires any surgical treatment. When accompanied in this way the symptoms are very distinct and very manifest, usually direct, and also many reflex ones. The symptoms I shall not dwell upon, but at once enter upon the consideration of such methods as we have at present at our command for their amelioration if not cure.

Ten years ago, when I first began to pay particular

¹ Remarks opening the discussion upon this subject before the Section for Obstetrics and Diseases of Women of the Suffolk District Medical Society, November 30, 1892.

attention to this subject, backward displacements of the uterus were never treated by other than what we would now esteem the most palliative measures; attempts at replacements by packing, bi-manual replacement, and by the wearing of supports. The change has been very abrupt within the last three years in the adoption of some other method by which a patient may be cured. It has been my experience that very few patients who have been benefited by wearing supports have been cured. The percentage is a very small one indeed; consequently, I think a patient presenting herself to us to-day with a retroversion or retroflexion of long standing is entitled to a consideration of other methods of treatment than this.

The first treatment naturally suggested is to try to replace the uterus. The simplest of these methods is by replacement under ether, and that can sometimes be done. About four years ago I read a paper upon this subject, and was quite enthusiastic in regard to the forcible replacement of the uterus and rupturing of adhesions, and thought I was getting a good deal of success with it. I have changed my views decidedly in that matter; and I think it is very seldom that replacement of the uterus under ether where there have been strong adhesions is successful. I think we may get it in place, but I believe the rectum, instead of being separated, is dilated, and the other intestines drawn up to accommodate themselves to the new position, consequently the relief is but temporary.

This operation I now regard as unsurgical and unscientific when considered as an operation to be attempted in any case of firm adhesions. Accepting the conditions which we find by a *cœliotomy*, adhesions of any considerable degree of severity are also accompanied by shortening and induration of the broad ligaments, usually involving tubes and ovaries. Coils of intestines are almost always similarly involved. When sight and touch can both be directly employed accidents frequently happen: rupture of the intestine, or of a varicose vein of the broad ligament, laceration of tube or ovary, hæmorrhage from a torn adhesion, — how much more danger when this forcible disruption is practised with absolutely no safeguard. Moreover, as I stated above, from a not inconsiderable experience, I have concluded that success is more apparent than real, more temporary than permanent.

The next operation which suggests itself, and which has given, I think, the impetus to surgical treatment more than anything else, is the operation for shortening the round ligaments. This is an operation which is practically done in one of two ways, either by shortening the round ligaments at their emergence from the abdomen, in the inguinal canal, or intra-abdominal shortening of the ligaments. In a case in which the abdomen is opened for another purpose the shortening of the round ligaments intra-abdominally is, I think, the better procedure. It is simple, and one which I think is very satisfactory. Where the abdomen is not opened, however, as in the case of retroversion or retroflexion in which there are no adhesions, but which has existed so long that the uterus is chronically displaced, I think the external operation, that is, shortening the round ligaments in the canal, is by far the preferable operation.

The technique of this operation varies according to the wish of the operator. My own practice has been to shorten at the external ring in the majority of cases. Possibly I am influenced in that because I have had

better results by doing so, and because I began in that way. Another method is to open the inguinal canal through a very minute incision, and fishing up the ligament with blunt hooks and drawing it through the fascia out on the side and fasten it there. I am not so favorably impressed by the operation as I had expected to be; and where I have tried it, it has seemed to me the difficulties have been equally as great as in the original operation which I did. It is unnecessary to enter into the detail of the different steps of the operation, but to speak in a word of its results. I have had an opportunity to examine a great many of my cases some years since the operation of shortening the round ligament, and I have found the results very satisfactory indeed, in regard to relief of symptoms, and anatomically. I have had a very small percentage of return of the displacement. I have seen cases in which the patient has subsequently become pregnant, and gone on to term without trouble. There has never seemed to be any drawback, to my mind, in the operation except one, and that is, I have found more cases of phlebitis following, coming on perhaps three weeks after the operation, than after any other operation which I have done, plastic or abdominal. The phlebitis has affected with one exception, I think, the left leg. This has come in cases where there has been no suppurative process or any suspicion of sepsis. It has followed a perfectly normal convalescence. I have seen three or four such cases, and have been unable to account for it. The same thing, I think, was formerly true of intra-abdominal operations on tumors of various kinds. I do not think we see that as often now. I know of one case in which tetanus was the cause of death after this operation. Aside from this I have not seen any ill results. I have never had a hernia follow. The uterus occupies very nearly its normal position after this operation, more nearly, I think, than after any other. There is one suggestion in this operation which I think it is well to carry out, and that is to furnish the patient a certain amount of artificial support for a period, in other words, adjust a pessary. I think that is a safeguard; and my own experience has confirmed that view. In two cases which I have seen, in one of which I did a *cœliotomy* subsequently, the uterus staid in place nearly a year, and then the displacement returned, and I operated to induce the menopause, and found both ligaments had separated at the uterine end. Another case in which I had displacement return, the ligaments had stretched out again; and that I think is one cause of the failure in a good many cases. Enough of the ligament is not pulled out. As I have seen other men operate, they are usually satisfied with pulling out an inch. I think you should pull out from two to four inches; if it is a nullipara, probably two to two-and-a-half inches will suffice. In a woman who has borne children, I think, usually you can bring up two to four inches and bring the uterus well up forward. Another cause of failure, I think, is, that there is not a educated hand bringing that uterus up into its natural position while you are operating. It is not enough to get hold of the uterus and pull it up, because if there is a flexion, it stays flexed and is lifted bodily, and it should be anteflexed. In the intra-abdominal operation I get up all the slack I can, then anteverte the uterus and scrape the peritoneum on both the uterus and on the surface of the round ligament, and unite them with silk sutures, one on each side of the uterus, and cut the suture

short and leave it. I have never seen any ill results follow.

It is universally accepted that, when adhesions exist, the shortening of the round ligaments extra-abdominally is not an operation to be considered. I personally do not admit this, having from a somewhat extended experience found that, although anatomically a failure, clinically I have in a not inconsiderable number of cases obtained success. The whole question depends, not upon the presence of adhesions, but their location. If so high up on the rectum as to allow it to be easily dislocated upwards, if involving only other portions of the intestines than its rectum, and if the broad ligaments are not so shortened as to induce much tension, excellent clinical results may be reached. I have performed the operation many times. I regard it as a routine operation, and no longer entitled to a distinct classification.

The next operation which may be considered is the one in which we do a cœliotomy for the sole purpose of curing a backward displacement of the uterus. Associated with this condition almost invariable are strong adhesions; and with these adhesions we find the tubes and ovaries often blended in one mass by bands of organized lymph with the intestines. That reduces the operation from being one simply for replacement of the uterus to one possibly involving the removal of the tubes and ovaries. Where I have this to do, I think it is well if the tubes and ovaries can be saved, to do so, but then to adopt the plan also of shortening the round ligament by stitching it on to the front of the uterus, which pulls the ovaries and tubes well forward and prevents their sagging backward and behind the uterus, and tending to make the displacement recur. Then I stitch the uterus to the abdominal wall by silkworm-gut sutures. Four years ago I had the pleasure of reading a paper before the Massachusetts Medical Society on this subject. I had then done three cases; and they were perhaps among the very first, if not the first, done in the city for the sole purpose of replacing the uterus by this method of stitching to the anterior wall. My results were very unsatisfactory. One staid up a year but has since gone backward. Since then my success in keeping the uterus up has been better; but I do not think that is at all an ideal surgical operation, for two reasons. If you keep the uterus up against the anterior abdominal wall firmly united, you keep the uterus displaced. It is a question of displacement anteriorly instead of posteriorly; and I think it leads to the same condition (hyperæmia), though in less degree than the backward displacement. It relieves pressure on the rectum and kindred symptoms only. If the uterus stays up there, you have formed a place for the intestines to get in and become strangulated. Now, in this method of treatment, there are two ways of doing: one is to lift the uterus by stitches, which you leave; and the other is to remove the stitches and trust to adhesions which have formed to keep the uterus up. I usually leave in my stitches for about two weeks, possibly longer if there is no suppuration about them, and then remove them and trust to the adhesions which have formed being sufficiently strong to hold the uterus in place until the intestines have assumed their position behind the uterus normally to support it, and until the habit of the uterus towards flexion has been overcome. Also, in these cases I now shorten the round ligament at the same time intra-

abdominally to serve additionally as support. I think this combined method of operating is the best we have.

These represent to my mind the principal operations for replacement surgically of the retrodisplaced uterus. There are others. The one in which the sutures are passed through the uterus, and then brought out through the vagina and tied, strikes me as being a very unscientific operation indeed. It requires a very peculiar-shaped needle; not that that is an objection, but the manipulation must be extremely difficult, and the results cannot in the hands of ordinary operators be successful. The bladder has been perforated a good many times in this operation, although no harm has resulted from it; still I think it adds an element of a great deal of danger.

To summarize, for purposes of discussion, there are at present the following recognized surgical procedures for replacement of the backward displaced uterus:

- (1) Forcible rupture of adhesions during anæsthesia.
- (2) Shortening of the round ligament extra- and intra-abdominally.
- (3) Cœliotomy, with fixation of the uterus to the abdominal wall by permanent stitches, and by temporary stitches.
- (4) Cœliotomy, with fixation of the uterus to the abdominal wall by temporary stitches, and intra-abdominal shortening of the round ligament.

THE USE OF COMPRESSED CARBONIC ACID GAS FOR THE FREEZING MICROTOME.

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The following method of making use of compressed carbonic acid gas, or carbon dioxide, was suggested and introduced into the Sears Pathological Laboratory about two years ago by Dr. S. J. Mixter, after observing the difficulties, especially in warm weather, connected with the use of ether and of rhigoline for freezing. Owing to the frequent requests received for a description of the process, it has been thought best to publish a brief account of it.

Compressed carbonic acid gas, or liquid carbonate as it is commercially called, is obtained in cylinders holding ten and twenty pounds.¹ The larger size has been found the cheaper and more convenient for laboratory and hospital use. The cylinders must be bought in order to keep them for any length of time; and it is best to own two, so that one can be used while the other is being refilled.

To adapt the cylinder for laboratory use, the following changes were found necessary: A circular block of iron an inch in thickness and of the diameter of the handle of the valve was fastened to the latter by two screws with nuts. Into this block were bored four holes ninety degrees apart and of a size sufficient to admit the end of an eight-inch handle, *B*. This greater leverage affords much better and more even control over the escape of the gas.

The cap covering the escape-pipe was unscrewed, and a hole bored through it large enough to admit of a small brass tube with a fine bore being driven tightly into it. The cap thus prepared can be kept and used on any other cylinder received. One end of a small but thick rubber tube, *C*, was then slipped over the

¹ A circular giving prices, etc., can be obtained from the American Carbonate Co., 424-434 East 19th Street, New York.