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POST-OPERATIVE THROMBO-PHLEBITIS.*

BY

HENRY C. COE, M.D.,

New York.

A REVIEW of the literature of this subject shows that it has attracted widespread interest since the publication of the writer's paper six years ago (*Medical News,* July 1, 1899). He has been led to modify the views expressed at that time, especially with reference to the septic origin of the affection, which were then held by such an eminent authority as Prof. William H. Welch. It must be confessed, however, that but little new light has been thrown upon the etiology, though some advance has been made in the direction of prophylaxis.

It is assumed that we are dealing almost exclusively with the question of crural thrombo-phlebitis following pelvic operations other varieties belonging more properly to general surgery.

The introductory paper in this discussion has been assigned to the writer, so that he will simply review briefly the whole field without encroaching upon the special topics to be presented by the other speakers. From a survey of recent literature and an inspection of hospital records it is evident that there is no apparent diminution in the number of cases of post-operative thrombo-phlebitis, or of deaths from thrombosis, in spite of the marked improvement in aseptic technique and the resulting low mortality from sepsis. Hence the inference, already forced upon us after wider clinical experience, that infection is *not* to be regarded as the sole cause of phlebitis. Moreover, no one will be inclined to doubt that this complication is most common in connection with the local circulatory disturbances accompanying uterine fibroids.

The prevailing view is thus epitomized by Da Costa (*Modern Surgery,* 1907, p. 185): "The essential cause is damage of the endothelial coat of bacteria, hence most cases seen by surgeons are infectious." Slowing of the blood current alone, he believes, does not cause thrombosis. "A thrombus," he adds, "can form

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only where fibrin ferment is set free, and fibrin ferment can b set free only when white corpuscles disintegrate."

Frasier (Keen's *Surgery*, Vol. I, 1906) believes that infection is the chief factor in the majority of cases, rejects the theory of chemical changes in the blood, and holds that slowing of the circulation is only a contributory factor when there is a lesion of the vessel-walls.

Cordier (*Jour. Am. Med. Association*, December 5, 1905) collected 232 cases of thrombo-phlebitis following abdominal and pelvic operations, the *left* saphenous or femoral vein being affected in 213. In 69 cases the complication followed aseptic hystero-myomectomy, in 16 oöphorectomy, in 27 aseptic appendectomy; 3 were after Alexander's operation, 7 in hydrosalpinx, 8 after vaginal section, 7 after ventrosuspension, 9 after vaginal hysterectomy for cancer, and 65 after "undescribed" pelvic and abdominal operations. 166 were "clean" cases. In the majority the symptoms appeared between the 10th and 15th days, and in only 3 did sudden death occur, though lung complications were noted in 6

The writer concludes that thrombo-phlebitis occurs in 2 per cent. of *all* abdominal operations, being rare after vaginal, and most frequent in anemic patients with bleeding fibroids. He infers that although this condition is present most often after aseptic operations, where no drainage is employed, it is due to a "mild type of infection," though he admits in conclusion that there is "no satisfactory anatomical explanation."

Schenck (*New York Medical Journal*, September 6, 1902), from a study of forty-eight cases of post-operative crural thrombosis, concludes that this is a rare complication except after intropelvic procedures, that it is infrequent after septic operations, that anemia in connection with neoplasms is an etiological factor, and that traumatism during operation (especially the use of large retractors) may be a contributing cause (yet, how common is the use of retractors, especially by general surgery!).

Albanus (*Brunn's Beiträge zur klin. Chirurgie*, Vol. 40, 1903, p. 311) notes 4.64 per cent. of cases of thrombosis in 1,140 laparotomies, in 2 per cent. of which pulmonary embolism occurred. He does not refer to infection at all, mentioning as etiological factors the prolonged recumbent position, retardation of the blood current, changes in the heart (especially from narcosis) and in the blood, traumatism and obstinate constipation.

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Clark (*Univ. Penn. Med. Bull.*, 1902, p. 154), in a paper which smacks somewhat of the study (in spite of the approval of such high authorities as Meck and Recklinghausen), opposes the septic origin of post-operative thrombo-phlebitis for the following reasons: (1) The temperature is seldom elevated before the development of the condition, and neither pulse nor temperature indicates a septic process; (2) It usually follows *clean* cases; (3) Even in infected cases there is no coincidence between the time of the infection and the appearance of the phlebitis; (4) It usually dvelops after the eighth day, most often after the fifteenth; (5) If it were due to infection there should be a considerable mortality.

The writer advances what would seem to be a somewhat fanciful theory to explain the affection, which he claims (in opposition to statistics) is most common after ventrosuspension, viz., traumatism and thrombosis of the deep epigastric veins from the use of retractors, and extension of the thrombi to the femorals. He believes that such thrombi doubtless often form in the epigastrics, but on account of the free anastomosis of the opposite veins, this extension is exceptional. He appends a report of forty-one cases from the Johns Hopkins Hospital records, the majority following fibroid operations, with no mortality.

I need not call attention to the many papers and discussions on uterine fibroids (several by Noble), in which stress is laid on the greater frequency of phlebitis after hysteromyomectomy. The most recent contributions to the literature of this subject will be found in the *Trans. Am. Gyn. Society* (Vol. 31, 1906), to which Drs. Johnson and Boise contribute papers which—with the accompanying discussion—are interesting, but, like the others quoted, add no definite information to our present knowledge of the etiology and prophylaxis, since in nearly every instance the writer, or speaker, simply expresses his personal opinion, or quotes that of another authority.

The point of especial interest to the surgeon is: How far is post-operative thrombo-phlebitis preventable? Noble, in discussing the cardiovascular changes associated with uterine fibroids, says: "If patients were operated upon early, and if when referred for operation late, they were well prepared before operation, the mortality from cardiovascular changes would be much diminished. There is no doubt that the occurrence of

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thrombosis, phlebitis, and embolism is favored by the anemia and cardiovascular degenerations resulting from fibroid tumors, and thus add to the morbidity of operations." What this preparatory treatment includes is by no means clear. Boise (*Trans. Am. Gyn. Soc.*, Vol. 31, 1906, p. 72) suggests that we may attempt to diminish the coagulability of the blood by administering citrate of soda. He quotes Prof. Wright to the effect that the same result is attained by the ingestion of alcohol and large quantities of water. As a matter of fact, during the eleven years in which the writer has been connected with Bellevue Hospital he has rarely administered alcohol (either before or after operation), relying entirely upon strychnine and water. It is a singular fact that only three cases of post-operative phlebitis have occurred during this period, even in bad septic cases, when in private practice and at the Memorial Hospital he has sometimes had as many cases in a single year. This difference cannot be explained by any theory of difference in the preparatory or after-treatment of patients. Can it be due to the fact that the Bellevue patients are allowed more latitude in the matter of moving about, sitting up, etc., or that they are permitted to leave their beds earlier? This brings us to the radical change in the after-treatment of laparotomy patients, of which our esteemed Fellow, Dr. Boldt, is such a consistent and successful advocate. His recent paper (*New York Medical Journal*, January 26, 1907), based upon 1,000 cases by Ries of Chicago and himself, claims our serious consideration, and will undoubtedly exert a marked influence upon the routine methods of abdominal surgeons. The writer does not intend to discuss, or to criticise, this treatment, as it will form the basis of a paper by one of the other readers, but he is prepared to admit that he does not maintain his former antagonistic attitude, but has already begun to shorten the period during which he keeps his patients in bed. From the standpoint of the prevention of post-operative thrombophlebitis due to slowing of the blood current, there is much to be commended in Dr. Boldt's method. But it would seem that some judgment must be exercised in the treatment of different cases. Certainly after the removal of large fibroids few would have the courage to allow patients to leave their beds, at least until the end of the week. The novel and apparently heroic nature of the treatment ought not to prejudice us against it before it has had a fair trial. The fact that in these 1,000 cases not a single case of embolism

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has occurred is itself a proof that we must modify our views as to the etiology of this accident. It is only fair that the members of this Society should be able to speak from practical experience before they can pretend to criticise intelligently.

It must be confessed that little has been added to our knowledge of the diagnosis and treatment of crural thrombosis during the past decade. It is easy enough to recognize this condition, even at its inception and before any elevation of temperature has occurred, when local pain and tenderness develop in the thigh, popliteal space, or groin, though edema may be entirely absent. It is more difficult to detect intropelvic thrombosis, which is often impalpable. It has doubtless happened to us all to meet with puzzling cases, both puerperal and post-operative, where the most careful examination fails to account for the late elevation of temperature, and when sepsis can apparently be positively excluded. In a few instances the writer has been able to diagnose thrombophlebitis of the veins of the broad ligaments, but more often the condition has merely been inferred, the diagnosis being subsequently confirmed by the evidence of extension to the saphenous or femoral vein.

The prognosis as regards recovery is favorable, although it must be confessed that one or two years may elapse before the leg is restored to its full usefulness, a most annoying sequela of an otherwise successful operation. Few, if any, will agree with the gloomy view expressed by Albanus, who notes 2 per cent. of cases of embolism resulting from phlegmasia. The writer has lost two cases from embolism on the sixth and tenth days after aseptic hysterectomy, but never in connection with crural thrombo-phleibtis, and, so far as his study and observation go, the danger from detachment of the thrombus has been greatly exaggerated. Like other traditions in medicine, this has been handed down through succeeding generations of writers. Several cases have indeed been reported (see the writer's paper, before alluded to), but these are really insignificant in number when compared with the up hrdlu cmfwyp vbgkqj xzfiflffffi tao operations annually performed.

As regards treatment, it cannot be said that any advance has been made. Certainly no medication, internal or external, has ever seemed to hasten the absorption of the thrombus or to restore the circulation. Time alone will effect that result. Whatever position is most comfortable to the patient is safe. Some prefer to

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have the limb elevated; other to move it freely. Bandaging usually relieves when there is much swelling, and of course is advisable when the patient leaves her bed, the light elastic webbing being preferable. Nothing is gained by allowing her to bear her weight on her leg early—in fact, many a discouraging relapse has followed when the surgeon yields to her impatience, against his better judgment.

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