and opium. Galvanism has also been recommended. I can only say, that I have never tried it myself, or seen it tried by others.

Prognosis.—This will vary with the cause of the disease: if it be of malignant origin, it is hopeless, unless, indeed, we venture to excise the stomach; but if it arise from irregularities of diet, or from weakening of nervous or muscular power by fever, we may hope for recovery proportionate to the thoroughness with which we remove the cause.

SOME REMARKS ON THE DELIGATION OF LARGE ARTERIES BY THE APPLICATION OF TWO LIGATURES AND THE DIVISION OF THE VESSEL BETWEEN THEM.

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DURING the past autumn, whilst in charge of Mr. Willett's wards, it fell to my lot to tie the femoral artery three times for popliteal aneurysm. In each instance, two ligatures were applied, a little less than half an inch apart, and the artery completely divided between them. The ligatures used were kangaroo-tail tendon; the wounds did well; the operations were performed strictly antiseptically; and in each instance the patient made a good recovery. The cases presented several features of much interest, which, however, it is not my intention to recount here, it being my aim rather to again call attention to a method of ligaturing large arteries in their continuity, which, I venture to think, is by far the safest as yet known. I say again, because no novelty can be claimed for it, as it is the method that was advocated and practised by the elder Bell, among others, and in the long past by the Arabian physicians. In recent times, as far as I know, Mr. Thomas Smith has been the first to once more resort to it; and at St. Bartholomew's Hospital, upwards of eight large vessels have been successfully tied in this way.

In the discussions that have been raised from time to time at the medical societies, and at the last meeting of the British Medical Association, on the value of different kinds of ligature, carbolised and chromicised catgut, ox aorta, whale tendon, carbolised silk, carbolised nerve, kangaroo-tail tendon, etc., it has always seemed to me that a very important point in accounting for failure has been lost sight of. Want of success has nearly always been attributed to the fault of the ligature used, and little or no account has been taken of the way in which it was applied. It is true that different opinions have been expressed as to whether the ligature should be tied tightly or loosely; whether or not it should be our aim to divide the internal and middle coats of the artery; or whether the mere contact of the ligature with the vessel is not sufficient to accomplish our purpose. The point to which I would refer as influencing the result of the operation is the amount of separation of its sheath that the artery has been subjected to in passing the ligature. That failure, in some instances, has been due to the softening or giving way of the material used, there can, of course, be no question; but I cannot help thinking that too free a separation of the sheath in passing the ligature may have had, in many instances, more to do with the want of success than the kind of ligature chosen. As the vitality of an artery depends in great measure upon the blood-supply that it receives from its sheath, it is easily conceivable how very little more or less separation may determine the success or failure of the ligature. No point, I suppose, is more strongly insisted upon in the works of surgery than the necessity of exposing as little of the vessel in its long axis as possible. I doubt, however, if in practice we are always sufficiently careful of this rule.

Mr. Savory, in an article in a recent number of the *Lancet*, calls attention to the danger with which, he thinks, is fraught the modern practice of separating the sheath of the artery by means of the director. He says: "It has happened in more than a single instance to me to see the artery injured, both in the dead and the living, by operating in this way;" and, to avoid the danger, he strongly advocates the opening of the sheath with the knife. It must have happened to all to have seen varying amounts of sheath separated from the artery by different operators, and even by the same operator at different times; and I believe that, whether the director or the knife be used, a certain amount of risk must always be run of too free an exposure of the vessel. There must always be a portion of the artery, however small, on each side of the ligature, the blood-supply of

which has been more or less interfered with; and, as the vessels of the sheath run principally in a direction from the proximal towards the distal end of the artery, it is but reasonable to suppose that the blood-supply on the distal side of the ligature will be the more affected, a circumstance which may have more to do than is generally supposed with the fact that, in secondary bleeding, the blood more often comes from the lower than from the upper end of the vessel. A slightly extra separation of the sheath must render the exposed portion of the artery liable to slough, or to die and be cast off. Such would appear to have occurred in the very interesting case reported by Mr. Bartleet at the last meeting of the British Medical Association.

"On the seventh day after ligature, alarming hæmorrhage ensued. On opening the wound, the artery-forceps brought up, with the slightest pull possible, what proved to be the catgut ligature. On examining this, the catgut was found to be not at all softened, but firmly knotted, slightly surrounding a small piece of artery which had come away with it. It did not appear to have ulcerated through the artery at all. The artery had separated about one-tenth of an inch above, and the same distance below, the ligature." Here the ligature had evidently no share in causing the secondary hæmorrhage, as it came away intact; and it seems difficult to explain how the death of the portion of the artery which came away with it was caused, other than by loss of vitality in consequence of the disturbance of the blood-supply that it receives from its sheath. It is not stated in the report how the sheath was opened. It would be instructive to know, in cases in which secondary hæmorrhage has occurred, in what way the vessel was freed from its sheath.

If two ligatures be applied, and the vessel divided between them, all risk of too free a separation of the sheath is absolutely avoided, as one ligature can be applied at the spot where the sheath is separated above, and the other where the sheath is separated below. After the vessel is divided, each cut end retracts, drawing the respective ligatures well into the sheath, thus leaving the blood-supply of no portion of the vessel on the proximal and distal side of the upper and lower ligatures respectively in any way interfered with. The artery is thus placed under very nearly the same conditions as one which has been ligatured in a stump, and exactly under the conditions as one the ends of which have been secured in a wound, and from such secondary hæmorrhage is very rare. Indeed, I am not aware that, after the two ends of a divided vessel have thus been tied in a wound, hæmorrhage, except from the slipping of a ligature, has ever occurred.

The normal longitudinal tension of the vessels constitutes another, and I believe not inconsiderable, source of danger in ligaturing an artery in its continuity. A transverse wound of an artery, as first pointed out by Mr. Savory, in consequence of this elastic tension, assumes a diamond shape. Should any part of the ligature cut through the vessel before it has become permanently occluded, this tension, by causing such a cut in the vessel to gape, thereby disturbing the connection of any internal clot that may have formed, or adhesions of the coats that may have taken place, must tend to the production of secondary bleeding. In a case of secondary hæmorrhage under the late Mr. Callender, on cutting down at the seat of ligature to secure the bleeding points, the hæmorrhage was clearly seen to be due to such a cause. The vessel, which had been secured by a catgut ligature, had given way opposite the knot (which itself was intact), and a gaping wound one-tenth of an inch wide existed in the walls of the vessel. By applying two ligatures, and dividing the vessel between them, all tension is taken off, and both ends are placed in a state of rest—the most favourable condition for healing.

It may be objected by those who teach that the internal and middle coats need not be divided, that the method here advocated is at the present day a retrograde step. Space does not permit me to discuss in this paper the question as to the desirability of dividing the internal and middle coats. For my own part, my mind is fully made up that such a division is most desirable; and, holding this view, the objection with me can have no weight. It has also been objected, that the application of a second ligature and division of the artery detracts from the simplicity of the operation—a point, I suppose, other things being equal, always to be aimed at in surgery. In this instance, such an objection appears to me to be a mere question of sentiment, and, as such, I venture to think, is of little moment, if, as I believe, it is a fact that, by using two ligatures and dividing the artery between them, greater safety is obtained.

MEDICAL MAGISTRATE.—The Lord Chancellor has added the name of Dr. Josiah Oliver to the Commission of the Peace for the borough of Maidstone.