

SUBPERIOSTEAL AMPUTATION.

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The practical utility of the so-called Subperiosteal method of amputation has not been appreciated at its proper value, nor has it received that attention from the profession that its merits deserve. It cannot be called a new operation, although the technique may be new to many surgeons. Attention was first called to this method of amputation seventy years ago, by Walther of Landshut who published a short article on the subject.

In 1859, M. Ollier first demonstrated the utility in amputating, of preserving the periosteum in order to close the medullary canal, and to favor union by primary intention, but owing to the supuration that almost constantly attended the healing of stumps in those days, all attempts at preserving this membrane were abandoned. Since the introduction of the use of antiseptics in surgery, the operation has been revived, and the practice advocated by Esmarch, Tretat, Naas, Volkmann and others who have recommended it as a highly valuable procedure. Dr. Nicaise read an interesting and valuable paper on this subject before the International Medical Congress at Copenhagen last year, in which he stated that he always preserved a portion of periosteum to cover the end of the bone in his amputations. The operation is not described in our text books on surgery, notwithstanding the favor with which it has been received by these distinguished surgeons. So that when it was brought again to the notice of the profession, a few years ago, many regarded it as an entirely new departure in surgery. It is about six years since my attention was first directed to this method of amputation. It at once commended itself to my mind as a most natural and rational procedure in all amputations through bone tissue, and I resolved to put it in practice on the first favorable opportunity. I have since then performed the operation a number of times and always with the most satisfactory results. The operation is especially indicated in all amputations which are necessitated in consequence of disease of the bones or joints. It may be well, however

to proceed further, to explain what the operation is and how it is performed.

The operation essentially consists in detaching and raising the periosteum from the portion of bone to be removed, to a sufficient extent to cover the sawn end of the bone. The length of the raised periosteum should be equal to the diameter of the bone at the point of removal. The method which I adopt and which I have found to be very simple and easy of execution is as follows: After having made the flaps as in any ordinary operation and sawn the bone through, the periosteum is peeled upwards from the sawn end of the bone, by means of the thumb-nail or raspator, to the required extent—1 inch or one inch and a half. In doing so, care should be taken not to detach it from the muscles, on its outer side, for fear of interfering with its nutrition. Having raised the periosteum to a sufficient extent, an assistant now grasps the end of the bone with stout forceps, the saw is again applied and the portion of bone denuded of periosteum removed. The raised periosteum now falls over the sawn end of the bone like a hood, and its margins may be united with fine catgut sutures, the arteries of the stump are then secured and the flaps brought together in the usual way. The use of sutures in the periosteum is not imperatively necessary. Esmarch and Naas recommend their use, but Nicaise does not regard them as necessary. The periosteal flap hangs over the end of the bone like a hood and very soon contracts adhesions. It will be seen therefore that the end of the stump is left in the same condition physiologically as obtains in other similar parts, the structures from without inwards being, integument, muscle, periosteum and bone. Indeed this is one of the advantages claimed for the operation, "that the sawn surface of the bone is brought into contact with the tissue, which is physiologically fitted for its protection, and to which it becomes organically united most quickly and certainly." Another advantage claimed for this method of amputation, is that the stump is much preferable to any other, inasmuch as the bone has no tendency to adhere to the cicatrix. The bone is also less liable to become atrophied, the stump is firm, and the tissues covering it move freely to and fro. But the most important office subserved by the periosteal flap, is its capability of quickly forming a layer of new bone, and effectually clos-