

## A NEW FLAP IN THE RADICAL OPERATION.\*

BY GEORGE A. LELAND, M. D., BOSTON, MASS.

Some investigations I have been making for two or three years have resulted in the production of a flap for closing off the aditus from the mastoid cavity. Dr. Crockett has it down on the program as a new flap. I do not know whether it is a new flap or not, but I have not been able to find it in the literature. We have all probably had to go through the mastoid operation a second time. Then the patients kick, because they think it was not done properly the first time. I confess that the first secondary mastoid that I did I thought that the first operation had not been properly done; but after investigating a number, I concluded that it does not make so much difference how they are done first; whether they are properly cleaned out or not, they may be just as likely to need a secondary operation. These secondary operations come from a few weeks or months to a few years after the first. I have had occasion to operate during the last four or five weeks on four cases of secondary mastoid; some of the first operations I had done myself, some had been done by others. One recurred eleven years after the primary operation. In one of these cases I had operated on the child in infancy after scarlet fever. A year afterwards he was operated on for a secondary mastoid at the Carney, which was evidently done all right. Within the last two or three weeks I have had to operate again for a large amount of cholesteatoma which destroyed the whole cavity, and in that case the radical operation was done. The question arises, how can we stop the secondary infection of these mastoids? In these secondary mastoids, where we open up the old scar, we find there is a direct passage down into the middle ear through the aditus, lined with granulations in a fibrous envelope. Outside of this fibrous tissue there is more or less production of new bone. Now, if the aditus is not closed off there is no reason why this tract should not have a secondary infection, as well as the first one. The middle ear is infected up through the tube, and then the infection goes up through the aditus and through this soft space leads to the outside surface and an abscess appears. In talking this matter over with some of the New York men, the desirability of shutting off the aditus, provided it was not shut off by the proper deposition of

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bone, was admitted. Dench and I thought that we would put a piece of sterile rubber tissue down over the aditus. I tried it several times, but of course it was not successful, because the middle ear side of the tissue was subject to infection, while the other was imbedded in granulations, so that these little pieces gradually floated out, and I had to go back to the old packing. On talking it over with Dr. E. H. Nichols, our surgical pathologist, I asked him if a piece of periosteum would live if put down over this aditus, separated from its attachment. Of course, that would not grow unless it were nourished, and he suggested that if I could get a large enough flap from the posterior surface of the mastoid it might grow if there were large enough attachment to give it nourishment. So for the last three years, after excavating acute cases, I have been taking a very large flap of periosteum from the bone back of the ear and packing the posterior end over the aditus, bending the bone surface forward to be applied to the posterior meatal wall. I may not live long enough to know whether these cases ever become infected again, especially if they are going to last eleven or more years before they have another infection, but theoretically and certainly in most cases this flap closing off the aditus will be sufficient to avoid further infection of the mastoid cavity. The periosteum forms a layer of bone, which closes off the aditus, and the posterior or skin surface grows fibrous tissue, which assists in filling the mastoid cavity. Nichols also said that if the flap were not long enough it would contract. I found that to be the case, and therefore have had to increase the length of the flap. The ordinary curvilinear incision is made through the skin and superficial muscles, so that we have a considerable thickness of tissue. This leaves more thickness between the fascia and the bone. Then the incision through the periosteum and overlying tissue is made from the mastoid tip upward and backward along its posterior border, then horizontally backward for half an inch or more, then upward to the temporal line, then forward on this line to the posterior mastoid limit, and then upward and forward through the temporal muscle, if necessary, to meet the first superficial incision. The idea is, we have got to take rather more periosteum than we might think would be necessary. After the cavity is well excavated, this tip is put down over the aditus and packed firmly with small pieces of gauze or wicks. Then at the first dressing, four or five days after, provided the temperature has not risen, these wicks are not disturbed, but the rest of the cavity is unpacked and redressed. At the second dressing, three or four days later, on taking out the

wicks, the flap will generally be found to be fastened over the aditus by firm adhesions. In some cases I did not get a large enough piece of periosteum, and at the second dressing I found that the periosteum had lifted up. I have one case here now where the periosteum had lifted up and did not cover the aditus; so I gave him ether, tore the periosteum loose where it had adhered to the posterior wall, and moved it over the hole, and now you will see that it has grown there, although it does not look so; but I have tried a probe and found it soft all the way down, with no passage into the aditus. If we have not obtained enough flap, and find that it does not cover the aditus, we can take away more or less of the posterior bony wall. We find at times that there is a good deal of tissue in the flap, making it quite thick, but this is an advantage, because it contributes to its nourishment, and also fills the cavity somewhat.

Now it occurred to me that if we could go still further and obliterate the posterior excavated cavity which results from the radical operation, we could save the patient a great deal of trouble from the treatment that is almost always necessary at intervals, for the removal of effete epithelium, wax, etc., that is so annoying. In these cases, after taking away the posterior wall, I have taken this flap and put it right down upon the facial ridge, pushing some of it down into the aditus, which of course is open, as well as the antrum, i. e.; I shut off the aditus with the flap and have its edge fastened upon the facial ridge. In that way is made a new partition between the middle ear and the posterior cavity. The posterior canal wall is split, according to the method most desirable for the case in hand, and then the middle ear and canal are firmly packed, the anterior packing being made to fill out even with the facial ridge; then the periosteal flap is adjusted to the ridge and the aditus and anchored there by firm packing as in acute cases, and the posterior cavity is packed tight. At the first dressing, several days later, we take away the lighter packing behind, and do not disturb the packing on the periosteum. At the second dressing we can take this away carefully, not, however, disturbing the packing in the canal. About the third dressing we can take this out, and in most cases, so far as I know (of course, I have not done it a great many times) the periosteum has adhered firmly in position upon the facial ridge, and the posterior cavity being then packed lightly, fills up very rapidly. Finally the middle ear is dermatized. I have not yet tried to dermatize it at the first operation, because I wish to be pretty sure that the flap was in good position. Only in one case have I had any difficulty, and in that case the lower part of the

periosteum did not adhere, and there is a small cavity at the posterior inferior part of the wound. That, I think, was my first or second case. In a secondary operation I have had just lately the periosteum was almost useless, as it had a weak place in it at the middle, and the lower part sloughed out. This case proved to have an hereditary specific taint, and healed very poorly, so that the flap operation was a failure. One point I have learned to avoid in treating these chronic cases, and that is, placing the flap down there and expecting it to anchor itself and grow if the case is not a strong, vigorous and healthy one. If the healing is sluggish, the periosteum contracts and does not adhere, and therefore we have to go back to our old packing and dermatization just as before. If then the periosteum does not adhere we are not any worse off than before.

I have several cases here to show; one is a case of mastoid with hardly any pus in the cavity. I put the flap down, and it stayed, and the middle ear drained up through the external canal. The flap was not washed off or in any way compromised by the pus. In some of these cases which I have tried at the South Department, where the infection was extreme, there was a great deal of pus, and the necrosis was rapid. Here the flap always floated out. I have also tried it with the blood clot, as suggested by Sprague and seconded by Blake; but they were not successes. Now, if this firm fibrous tissue of the periosteum covers the aditus, the posterior cavity becomes a simple wound, to be filled with granulations, and the proliferation of the tissue from the posterior surface of the flap assists and hastens the process of healing very greatly. I also show two cases healed after radical operation, with no posterior cavity and the external canal only a little larger than normal; and five cases nearly healed after operation for acute mastoid, one double.

354 Commonwealth Avenue.

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**A Note of Hypopharyngoscopy.** HAROLD S. BARWELL. *Lancet*, August 17, 1907.

Describes the method devised by von Eicken of Freiburg of inserting a stout laryngeal probe between the vocal cords which can be drawn forward, so as to expose new growths in the post-cricoid region.

THOMSON.