

BONE TRANSPLANTATION FOR CORRECTION OF
NASAL DEFORMITIES.*

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Up to five years ago comparatively little was written on bone transplantation for the correction of nasal deformities. Since then much has been written and many methods devised. I claim nothing original except some modifications. In this paper I shall speak of three or four methods which have been very successful in correcting marked nasal deformities.

First, as to the preparation of the field of operation: Thorough cleansing of the skin or the nasal mucous membrane with soap, alcohol, iodine, or iodine and alcohol, equal parts, or silver nitrate solution, four per cent. If the intranasal method is selected, the nose is first freed of the vibrissæ, the nasal cavities thoroughly cleansed, and the posterior space packed so as to prevent contamination of the field. In selecting the extranasal route, the eyebrows are treated as the skin, and part of the eyebrows nearest to the glabella shaved. The face is cleansed with soap and water, followed by iodine, or iodine and alcohol, equal parts, or silver nitrate solution, four per cent. Cohen of Baltimore condemns tincture of iodine for cleansing purposes. He claims that in several cases in which he has used tincture of iodine he had infection following. The infection may have followed in his case had he used some other method. I think that is no argument against tincture of iodine. Other writers have used tincture of iodine with no infection. I have used tincture of iodine and alcohol, silver nitrate, solution four per cent, and have had no infection in any of my cases. After the skin preparation the face should be covered with sterile gauze, leaving only the field of operation exposed. The operator and assistant should wear rubber gloves.

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I wish to speak only of those cases in which the nasal bones are destroyed or in which the bridge lacks support, in which the deformity extends from the nasal notch to near the tip of the nose.

In selecting bone for transplantation, Back prefers the anterior margin of the tibia, and the intranasal route. The anterior margin of the tibia is easily reached, and a piece of bone the proper length, from two to two and a half inches, should be removed. This should be done by a surgeon while the operator is preparing the field for inserting the graft. The bone graft should be removed with the periosteum and placed in a warm normal salt solution. This should be trimmed by the operator to suit himself. This gives you a triangular section of bone covered on two sides by periosteum.

In the intranasal route, the nasal mucous membrane having been prepared, the incision is made through the mucous membrane along one side of the septum, at the junction of the upper and lower lateral cartilages, some distance from the tip of the nose, say three-quarters of an inch from the tip of the nose. The tissues are dissected or elevated along the dorsum of the nose and, over the nasal spine to the nasal notch under the periosteum, and down to the tip of the nose, making a pocket in the tip. After the graft is trimmed to the proper length and size, usually three-eighths of an inch thick and two inches long, it is introduced into the incision, the upper extremity pushed into contact with the nasal notch, the side of the graft which is devoid of periosteum is placed inferior, the two sides covered by periosteum being subcutaneous, the tip of the nose is pulled down and the end of the bone is slipped into the pocket at the end of the nose. No stitches are required, the mucous membrane entirely covering the graft. The nasal cavities are packed with vaseline gauze or zinc oxid gauze for twenty-four hours.

Hayden of Chicago prefers the extranasal route, and a graft taken from a rib. A thin portion of a rib should be selected, removing about two and a half inches. The edges should be trimmed to make the bone the desired width. If too thick, it can be flattened by crushing the cancellous tissue, which is easily done by tapping gently on the flat surface of the rib with a mallet. Some operators have removed the can-

cellous tissue, and used only the two compact plates, but this has proved not so successful, the graft lacking the proper nourishment, as the cancellous tissue favors the access of blood vessels which nourishes the bone. The bone graft is then taken care of as in the first method described. An incision about an inch long is made transversely over the glabella and the periosteum is elevated. I find it very much easier to elevate by this method. It is quite easy to get under the periosteum and then follow down over the nasal processes of the superior maxilla and out over the malar bones and the maxilla, gradually working your way down and in toward the nose, working from both sides to the dorsum and to the tip of the nose. The graft is then introduced, the lower end extending to the tip of the nose and the upper end resting in the nasal notch. The incision is then partly closed with stitches. There should be left sufficient space for drainage, as there is considerable bleeding, and the swelling and ecchymosis will be less if proper drainage has been provided.

William Wesley Carter of New York City prefers the intranasal route, but he selects for his graft a portion of the ninth rib with the cartilage attached. He uses two inches or a little more, two-thirds of this being rib and one-third cartilage. He removes this section with periosteum on the external surface. He splits the graft through the center, using only the external half covered by periosteum. The graft is then trimmed and inserted as in Beck's method. The cartilaginous end is manipulated into the pocket at the tip of the nose. This graft has the advantage over the other two in that there is some flexibility to the end of the nose, which should be quite an improvement. The operation is in all details the same as the one described as preferred by Beck.

These photographs were taken in the latter part of 1914, these being my first two cases of bone transplantation for the correction of nasal deformity. The deformity being very great, there was no support between the nasal spine and the tip of the nose, both of these cases being the result of an injury in early childhood. In both of these cases pieces of the nasal bones had sloughed through the skin, leaving much scar tissue. In both of these cases I selected the extranasal route, as preferred by Hayden, but used the anterior margin of the

tibia covered by periosteum, as preferred by Beck. In both of these cases, as you can see by these photographs, the deformity was extreme, and on account of the scar tissue the elevation was extremely difficult, and had to extend over both malar and maxillary bones to allow the tissues to be raised sufficiently, to introduce the bone graft. The graft was prepared, as described in Beck's method, and the field was prepared as described in Hayden's method. To facilitate the introduction of the graft, I introduced a long speculum, such as is used in submucous resections, and then separated the blades and introduced the graft between the blades. I then withdrew the speculum, leaving the graft, which was easily manipulated into the desired position. The incision was then closed with two stitches, leaving room for drainage. These photographs were taken just preceding the operation, and the second photograph two weeks later.

The objection made by some writers against the extranasal route is that it leaves a scar. In these two cases the scar was insignificant and hardly noticeable. I see no objection to the extranasal route from this point of view.

In the intranasal route, I think you are more liable to have infection, although it is claimed that the nasal secretions have a germicidal effect, but from my observations I have found that those who used the intranasal route have had more infections than those who used the extranasal route.

I also think in marked deformities it is very much easier to elevate by the extranasal route than it is by the intranasal. In the two cases I have described, the scar tissue was so strong and the deformity so great, that I am of the opinion that I could not have elevated the tissues as easily or as well had I started by the intranasal route. By using the extranasal route it was quite easy to follow down over the nasal processes of the superior maxilla, over the malar bones and the maxilla, and then work in toward the dorsum of the nose until I reached the scar tissue, which had to be cut. It was impossible to separate these, so I had to cut through this scar tissue. In both of these cases I was successful in reaching the tip of the nose without puncturing the mucous membrane or skin.

Another important point is the immobilization of the graft after it has been placed in position. Many devices have been

invented. I prefer using very thin strips of absorbent cotton, pasting these over the nose, up over the forehead and down over the cheeks, using collodion for this purpose. You can make many layers and in different directions, so that you not only make a nice shield for the nose without any pressure, but you also fasten the nose so that it immobilizes the parts very well. Along with this you can use Andrew's aluminum splint, which can be used over the collodion cast. The collodion cast in this case would serve a double purpose, as the splint will more readily adhere to the fibers of the cotton than it would to a smooth surface. The splint is made of aluminum and easily conformed to the face and nose. The surface to be molded over the nose is rough and adheres to the cotton. The splint is fastened with cotton and collodion. I also used in the two cases described, a rubber tubing in the nostrils. I used this for a double purpose. In spite of the fact that I elevated over the malar bones and maxilla, the skin was so unyielding that it pulled down on the bone graft. I introduced the rubber tubing for the purpose of helping to support the graft as well as to give the patient considerable comfort in the way of being able to breathe through his nostrils. I used no other packing in the nose.

The change in the appearance of these two men was very gratifying. One man had finished a business course and could not obtain a position on account of his deformity. Two weeks after the operation the photographer who took the first picture did not recognize him, although he was dressed in the same suit and sat in the same position as he did just two weeks previous. I have seen this man several times since and had X-ray plates made. The graft was intact.