MODERN PROCEDURES IN EXCISION OF INTRINSIC MALIGNANT GROWTHS OF THE LARYNX.*

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Modern procedures exclude all attempts at intralaryngeal extirpation of intrinsic malignant growths of the larynx as virtually futile, except under fortuitous conditions not to be expected. Hence, direct access from the exterior is to be practised in consonance with general surgical principles.

This procedure comprises a central division of the thyroid cartilage, and sometimes of the cricothyroid membrane, cricoid cartilage or even of the trachea, as may be requisite to fully expose the morbid mass and its immediate surroundings when the wings of the thyroid cartilage are separated with retractors or with stout loop ligatures.

This may be done under either local or general anesthesia, and with or without precedent tracheotomy; the choice being dependent in great measure on the location and apparent extent of the neoplasm, and in part on the predilections of the operator.

For many years the writer's preference was for prophylactic tracheotomy several days in advance of the main operation, in order that the patient might become accustomed to the presence of a canula, the retention of which might be requisite for an indefinite period. This opinion, however, has been proven erroneous. Prophylactic tracheotomy is not requisite except where strong indication exists for the precautional use of a tube after operation.

The operative and postoperative technic has become so simplified of late, that the tracheotomy safety tube may be permanently withdrawn in most instances when the operation has been completed. Nevertheless, a properly prepared canula should be at hand for prompt introduction should contingencies arise requiring it. In such instances as seem to demand

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retention of canula, a fresh one should replace the tube used during the operation.

Forty years ago the writer reported¹ the extirpation, under ether, of a fibroid growth from the interior of the larynx after access by thyrotomy, without any tracheotomy whatever. On the seventh day the patient, a journeyman shoemaker was working at his last, having been able to sit up within less than twenty-four hours after the operation, and to take a walk in the street upon the fourth day. In this case, as in most of the few other cases upon which the writer has operated, the growth was removed with forceps and scissors; and no stitch whatever was taken in the thyroid cartilage or in its perichondrium.

The immediate technic of operating most in vogue at present is to begin, under chloroform inhalatory anesthesia, with an incision through the skin from the hyoid bone to some distance down upon the trachea. Then a tracheotomy is performed and a tampon canula inserted. The thyroid cartilage is then thoroughly exposed and divided in the median line with bistoury, saw, scissors, or cutting pliers. The wings of the thyroid are separated with retractors or with strong ligatures; cocain solution is applied to the interior of the larynx to control reflex movements, which otherwise are often very embarrassing during the dissection; adrenalin solution is subsequently applied to contract the bloodvessels and lessen the immediate hemorrhage of the excision, while at the same time it facilitates definition of the growth. Under careful retraction of the sides of the larynx, with the best available illumination, whether natural or artificial, the entire diseased tissues are exposed to vision, and removed with a surrounding zone of healthy tissues sufficient to secure the patient immunity from immediate recurrence *in situ*.

The writer continues to prefer his own method, which is to begin with an ordinary tracheotomy in the first place, and, after introduction of the canula, to incise the skin only so far as to uncover the larynx, thus leaving intact a broad bridge of skin above the canula. This lessens, considerably, the dimension of the external wound and favors reunion in the sequence. Should due exposure of the morbid parts require it, this bridge can be cut into, or be sacrificed entirely, but in the majority of cases under consideration it can be spared.

1. N. Y. Medical Record, 1867, p. 218.

Tracheotomy having been performed, a tampon canula is to be introduced to occlude the upper portion of the trachea; preferably Hahn's sponge-covered canula kept in an aseptic solution during the early steps of the operation so as to saturate the sponge. According to conditions, some little time, usually ten to twelve minutes, will have to elapse before the sponge becomes swollen sufficiently to fulfill its purpose and secure the trachea against the entrance of blood. This time is utilized in exposing the thyroid cartilage and getting it ready for division.

Hemorrhage having been controlled, the thyroid cartilage is divided in the middle line with strong, obliquely bent, short, cutting pliers, the lower blade being first thrust through the cricothyroid membrane and passed up to the incisure. In young people a stout bistoury will suffice. The wings of the cartilage are then held asunder with retractors, firmly, but gently, and if the exposure be insufficient for careful manipulation, the cricothyroid ligament and, if necessary, the cricoid cartilage may be divided to afford the required access to the parts. These parts being duly exposed, the interior surface of the larynx is freely mopped with a solution of cocain until the reflex movements are under control, and then the morbid mass, and half an inch or more of surface around it, should be mopped with a solution of adrenalin to diminish hemorrhage and define the growth. When saliva and mucus flow too rapidly into the larynx for control with mopping by an assistant, a tampon secured to a ligature for easy withdrawal can be pressed into the lower part of the pharynx so as to occlude it and absorb the secretions. In the few instances operated upon by myself this tamponing has not been necessary.

Bleeding and secretions being under control, the excision can be begun. The usual method is to surround the parts to be removed with an elliptic or oval incision down to the perichondrium, and so excise the mass with scissors or bistoury as to remove it, together with the underlying mucous membrane, and then carefully scrape the perichondrium and apply an escharotic. My own preference is, when practicable, to strip the inner perichondrium from the wing of the thyroid cartilage under the entire surface of the parts to be removed, raise the mass intact and sever it with serrated scissors at a distance, as far as may be, of about half an inch from the growth which is left untouched by any instrument, so that it

is removed in one piece looking like a miniature mass of flesh upon a fleshy plate. If the growth be located in the anterior or central portions of the half of the larynx, the denudation of the internal perichondrium can be begun from in front with an elevator or a dull pointed dry dissector such as Allis's, and then working it underneath until the whole of the portion to be severed has been raised from the cartilage. In cases where the growth is too far removed from the line of the thyrotomy incision, the elliptic incision to surround the growth may be made so as to extend through the perichondrium, and the perichondrium can then be attacked at the most accessible point, first with a sharp elevator and then with the blunt dissector.

After the removal of the morbid mass and the drying of the parts, the raw surface is thoroughly mopped with compound tincture of benzoin, and the wings of the thyroid are allowed to reapproximate. The tampon canula is now withdrawn from the trachea, and if breathing be comfortable no attempt is made to introduce another canula unless contingencies arise for it in the after treatment.

Should the adjustment of the wings of the thyroid cartilage be accurate there will be no necessity for taking stitches in the cartilage or in the external perichondrium to keep them in place. The natural resiliency will suffice, for cough occasions less disturbance than is theoretically surmised. Should the wings of the cartilage override, however, it will be necessary to insert sutures to keep them in correct apposition.

In my own practice no stitches are taken in the skin wound. Instead, a longitudinal strip of perforated plaster is placed along each side of the neck an inch or so from the line of incision, and then this plaster is sutured in several places through the perforations, along the line of thyrotomic incision, and tied only so tightly as to bring the severed edges of skin into gentle apposition, and leave the wound free for easy and immediate inspection. No threads are passed over the line of the tracheal incision, which is left bare to favor expulsion of matters from the air passages. A pad of gauze moistened in bichlorid or other antiseptic solution is then placed upon the wounds, while a strip of aseptic gauze is doubled over a strip of adhesive plaster and secured to the neck, so that the gauze hangs down over the dressing upon the seat of the wound. In this manner, there is no strain upon the skin from stretching of sutures, and the parts are readily accessible to inspection and manipulation.

The bed of the patient should have the foot portion raised so as to insure the flow of secretions toward the mouth and away from the air passages, and be so maintained as long as necessary. The patient should be placed near the edge of the bed lying upon the side of operation, and without a pillow under the head. When thirsty, an attempt may be made to draw sterilized water up into the mouth from a bent tube inserted at its lower edge. This will sometimes be practicable within a few hours, and then suitable nourishment can be administered in the same way until cicatrizations are sufficiently advanced to allow the use of more solid food. Should this plan be impracticable, nourishment should be administered by the bowel for a short time, or until deglutition becomes safe.

The post-operative treatment is as important as the operative procedure, and, therefore, the operator or a sufficiently skilled assistant should be within immediate call at least during the first twenty-four hours to combat any adverse conditions which may arise, although it will often be the case that nothing untoward does occur. But when anything untoward does occur, the presence of some one able to meet the emergency may be a matter of vital importance. Should it become necessary for any reason to re-introduce a canula into the trachea, which has to be maintained for several hours or longer, some method for moistening the atmosphere near the head of the bed should be provided so as to prevent the secretions from dessicating, and a piece of moistened gauze can be kept over the orifice of the canula. The external parts are treated on general surgical, antiseptic principles, and, although cicatrization by granulation is to be more or less expected, a large portion of the external wounds often heals by first intention, thanks to the absence of constricting strictures even in the upper portion of the cutaneous incision, and to the bridge of tissue preserved between the incisions for tracheotomy and for thyrotomy.

Under favorable conditions the patient should be able to sit up in three or four days, and should have practically recovered from the operative procedures in from two to six weeks.

In the description of this method it will be observed that much has been learned from the experience of Dr. Butlin and Sir Felix Semon, as reported during recent years; especially the preference of preliminary to prophylactic tracheot-

omy, the use of the loop of ligature in spreading aside the wings of the thyroid when the retractors are insufficient, and the removal of the tracheotomy canula immediately after the extirpation of the growth and attention to the wound of excision.

The retention of the skin bridge between the incisions for tracheotomy and for thyrotomy, the removal of the growth in mass upon a plate of excised perichondrium and superjacent tissue, the dressing with compound tincture of benzoin, and the avoidance of sutures in the cartilage and in the skin, and the special method of loosely approximating the edges of the incisions together are the chief points of variance from the usual methods in the practice of the writer.