

RECENT RUSSIAN CONTRIBUTIONS TO THE SURGERY OF
THE LARYNX.

1. VOSKRESENSKY: Extirpation of the Larynx for Cancer. By Dr. NIKOLAI M. VOSKRESENSKY, of St. Petersburg. St. Petersburg Inaugural Dissertation, 1890, No. 43.

2. PRAXIN: On Partial Laryngotomy. By DR. IVAN A. PRAXIN, of St. Petersburg. St. Petersburg Inaugural Dissertation, 1890, No. 76.

The first monograph, written under Professor D. I. Koshlakoff's guidance, is based on the digest of 166 cases of total or partial extirpation of the larynx, collected from international literature. The essential points of the work may be given thus:

I. Total extirpation; 130 cases, of which 17 operated upon by 7 Russian and Polish surgeons—namely by Prof. P. I. Multanovsky (4), Reiher (6) Kosinski (3), Prof. S. Bergmann (1), I. F. Sabaneeff (1), Krajewski (1), Krajewski and Wioblewski (1).

1. The patients' ages varied from 25 to 80, about 65.4% of the number referring to subjects aged from 45 to 65

2. As to the sex, in 14 cases it was not indicated; of the remaining 116, 92 referred to men, and only 24 to women.

3. Of 130 cases, 52 were epitheliomatous, while in 78 carcinoma (76 encephaloid, 2 scirrhus), was present.

4. Of 76 cases (giving details on the point), in 10 the new growth was circumscribed, in 66 diffuse. In 13 the left half of the organ was chiefly involved; in 14 the right; in 39 both of the sides were affected fairly equally; in 12 the posterior wall was diseased.

5. Of 78 (well-detailed) cases, in 27 the laryngeal cartilages were consecutively involved, in 4 of which necrosis of the structure was followed by the formation of a fistular tract opening externally on the anterior aspect of the neck.

6. In 19 cases the disease consecutively spread over the pharynx and gullet; in 19 over the trachea; in 4 to the hyoid bone; in 2 to the

base of the tongue; in 1 to the pharynx, œsophagus, tongue and hyoid bone simultaneously; in 1 to the thyroid gland.

7. In 7 cases the laryngeal disease was of a secondary origin, the new growth spreading to the organ from the pharynx and gullet (6 cases) or thyroid gland (1).

8. Of 44 cases (mentioning the detail), the cervical lymphatic glands were enlarged only in 14 (36.6%), while in the remaining 30 they were apparently normal.

9. Of 51 cases, in 11 the duration of the disease before the operation was under a year; in 16, from 1 to 2 years; in 17, from 2 to 3; and in 7 over 3 years.

10. Of 39 patients only 1 was well-nourished; in 27 the general state was bad, in 11 of a "middling" sort.

11. Of 64 cases, in 5 no preliminary tracheotomy was performed; in 11 it was made immediately before the extirpation, in 5 a few days previously; in the remaining the interval oscillating between 1 week and 1 year or (1 case) more.

12. In 33 cases the extirpation was performed after Billroth's method; in 15 after Langenbeck's; in 5 after Maas-Bruns-Pean's; in 7 after Kahn's; and in 3 after Bottini's.

13. In 20 cases there were removed, beside the larynx, portions of the pharynx and gullet as well; in 12, the whole or a fragment of the hyoid bone; in 3, a portion of the base of the tongue; in 14, cervical lymphatic glands; in 4, the thyroid gland; in 14, one or several upper tracheal cartilages; in 14, the epiglottis.

14. Of complications of the operation there were noticed profuse bleeding (5), wounding large-sized cervical veins (1), passing of blood down into the trachea (6), descensus of the trachea into the thoracic cavity (4), shock (3).

15. The operation lasted from 25 minutes (Gardner's cases) to 1³/₄ hour.

16. Of 44 cases, in 23 the after-course was entirely apyretic, while in 21 there was observed a short-lasting fever (up to 39°C).

17. Of 43 cases, in 10 the wound healed "quickly;" in 10, in from 3 to 4 weeks; in 25, in from 4 to 8; in 2, in more than 2 months.

18. Of complications of the after-course there were observed secondary hæmorrhage (6 cases), blood-spitting (2) and erysipelas (1).

19. As regards the issue, in 3 cases it remained unknown; in 24 (18.5%) recovery ensued; 38 (74.%) died; in 5 (3.8%) recidive occurred (ten patients being alive at the time of respective communications).

20. Of the 24 cases of recovery, 13 (10%) remained still healthy when seen from 3 to 12 months after the operation, while 11 (8.5%) were known to have survived without any signs of recurrence of the disease for from 16 months to 5 years. Of those 11 cases of a seemingly complete and permanent cure, 2 referred to women and 9 to men, æt. from 40 to 50 (4), from 50 to 55 (6) and 62 (1). The duration of the disease (6 cases of epithelioma and 5 of carcinoma) before the operation varied from 1 to 2½ years.

21. Of lethal cases, in 32 death was caused by pneumonia, 1 by purulent bronchitis, 2 pulmonary œdema, 1 pulmonary embolism, 2 pleuropericarditis, 3 consecutive hæmorrhage, 2 septicæmia, 6 collapse, 25 recidives, 6 exhaustion, 2 croupous pneumonia, 4 asphyxia; one patient committed suicide (about 9 months after the operation); in 11 the cause of death remained unknown. In a more or less direct connection with the operation, death occurred in 49 (48%) cases, of which, as was just mentioned, about $\frac{2}{3}$ died from pneumonia (and that mostly—27 out of 32—in the course of the first two weeks after the operation). Recidives occurred in the second month after the extirpation (3 cases), the third (3), fourth (7), sixth (1), seventh (2), from the eighth to twenty-first (5).

II. Partial extirpation; 36 cases, including 4 Russian, operated upon by Prof. Sklifosovsky (1), Reiher (2), and Prof. Simanovsky and Multanovsky.

1. Age varied from 25 to 80 years, 26 patients being æt. from 40 to 70.

2. Sex: 29 were men, only 8 female (in 4 cases unknown).

3. The duration of the disease before the operation oscillated from 7 months to 1½ years.

4. Cervical lymphatic glands were said to be enlarged only in 7 cases.

5. Of 36 cases, in 24 carcinoma was present, in 12 epithelioma.

6. In 11 cases the left half of the larynx was affected; in 10 the right; in 1 the posterior wall; in 1 the cricoid and upper tracheal cartilages. In 12 a diffuse new growth existed; in 3 a circumscribed one; in 6 an "ulcerated." In 5 the disease involved pharynx, gullet, tongue, hyoid bone and trachea.

7. Of 16 cases, in 3 no preliminary tracheotomy was performed; in 5 it was made just before the extirpation; in 3 a fortnight previously; in the remaining the interval oscillating between 3 weeks and a year.

8. The wound healed in from 2 to 8 weeks. The swallowing became free mostly on a 2d or 3d week, sometimes as early as a 3d or 4th day, and never later than 1 month.

9. Of 36 cases, 12 recovered, 17 died, in 6 the disease recurred.

10. Of 13 cases of recovery, 9 were known to have survived from 1 to 14 months after the operation; 1, 1½ year; 1, 3 years; 1, 5; 1, 8 years.

11. Of unfavorable sequels of the operation, laryngostenosis was observed (in 2 cases).

12. Of 17 lethal cases, 9 (52%) died (8 in the course of the first week, 1 in the 5th) from causes connected with the operation (3 from pneumonia, 3 collapse, 1 septicæmia, 1 consecutive hæmorrhage, 1 mediastinitis); 7 (44%) from the primary cause (cancer); 1 committed suicide.

13. Recidives occurred in a 2d month (4) or in from 3 to 18 (5).

III. General conclusions. 1, extirpation of the larynx for cancer must be regarded as a fully justified surgical procedure, since it undoubtedly affords the possibility of a radical cure.

2. Be the selection practicable, a partial extirpation should be preferred to a total one, since the former is less dangerous and more advantageous in functional regards.

3. The operation is absolutely contra-indicated only in the presence of an extreme exhaustion, and in subjects older than 70 years. Neither enlargement of cervical glands, nor the spread of the disease over the structures adjacent to the larynx can be regarded as absolute contra-indications.

4. To secure most satisfactory results, the operation must include such steps as *a*, a preliminary tracheotomy; *b*, insertion of Kahn's or Michael's tracheal cannule; and, *c*, a preliminary laryngofissure.

5. As far as possible, the operation should be followed by the insertion of this or that artificial vocal apparatus. Bruns' artificial larynx should be preferred to Gussenbauer's.

6. All accessible recidives occurring after the extirpation should be similarly subjected to a surgical treatment.

7. The strikingly more successful results obtained from the extirpation during the last 8 years (in comparison with the preceding 8 years) must be attributed to a better (aseptic) management of the wound and to the use of more perfect tracheal tubes.

II. This valuable contribution by Praxin is based upon *a*, extensive experiments and anatomic researches on dead bodies; *b*, 17 clinical cases from this author's practice; and *c*, an analytical review of 194 cases from international literature, of which 120 were derived from German sources, 41 French, 19 British, 11 American (U. S.), and the remaining from Russian (Prof. N. P. Simonovsky's 2 cases, and S. Mas-suriantz' case). Italian and Danish. [The review is, of course, very far from being exhaustive. Thus, it does not include Kopmann's 21 cases, Prof. E. Ericson's, etc., etc.—*Reporter*]. The author's own cases refer to 9 male patients, æt. from 2 to 52, and 8 female, æt. from 5 to 53, who were suffering from laryngeal cancer (4), syphilitic laryngitis (3), laryngeal perichondritis (2), croupous or diphtheritic laryngitis (2), tubercular (1), hyperplastic (2), submucous (1), laryngitis, laryngeal abscess (1), and lympho sarcoma colli (1). In rough outlines, his method (as practiced by him since May, 1886) a "rapid laryngotomy"—consists of the following operative steps: 1. With 2 or 3 sweeps of the knife he makes a vertical incision, from $1\frac{1}{2}$ to $2\frac{1}{4}$ inches long (according to individual peculiarities of the case), into the freely movable integuments (including the subcutaneous fatty layer. 2. Having thus reached the third fascia, *i. e.*, the superficial sheet of the cervical fascia, covering the immobile musculo-aponeurotic stratum—he divides the latter along the median line through its whole thickness

down to the visceral fascia. 3. Then he introduces his forefinger into the wound and, having found the cricoid cartilage, fixes the larynx (under the lower edge of the thyroid cartilage) by means of Bromfield's sharp hook, after which, 4, he plunges a narrow-bladed and sharp-pointed knife into the crico thyroid space, penetrating directly through the crico-thyroid membrane into the larynx. 5. Then he inserts into the (vertical) laryngeal wound a Trousseau's dilator, opens it and introduces a suitable cannula (usually Luer's No. 3 in adults, and No. 0 in children). 6. The patient is now rapidly made to assume a sitting posture (in order to prevent the blood flowing into the larynx), and the operator proceeds to tie any bleeding vessels, finishing by inserting some sutures into the wound of the soft tissues.

As a rule (in 11 out of 17 cases), the operation proves to be fairly easy, taking from 1 to 5 minutes' time. The crico thyroid wound commonly embraces the cannula sufficiently tight to prevent any penetration of blood into the trachea, notwithstanding a rather profuse venous hæmorrhage. The main propositions, laid down by Dr. Praxin, may be briefly summarized as follows: 1. Speaking generally, laryngotomy can be performed by far more rapidly comparatively with tracheotomy.—2. It should be undoubtedly preferred to the latter in the presence of the following conditions: *a*, hypertrophy of the thyroid gland, or a greatly developed isthmus—provided the asphyxiative symptoms, necessitating the operation, are dependent upon other causes than pressure by the hypertrophied organ; *b*, tumor of the cervical glands (lymphosarcoma, etc.), covering the trachea or displacing it laterally; *c*, inflammatory or phlegmonous swelling of the neck; *d*, an abnormally short distance between the cricoid cartilage and manubrium sterni (in very short-necked persons); *e*, high-graded asphyxia or profuse hæmorrhage in thick-necked subjects.—3. Laryngotomy may be successfully resorted to (instead of tracheotomy) in all possible stenoses above the conoid ligament (be they dependent upon simple œdema of the larynx or phlegmonous laryngitis, laryngeal perichondritis or cancer, etc.)—4. It is, however, absolutely contra-indicated in cases of tracheal intrinsic strictures, as well as in those of stenoses (hyperplasy, scars, abscesses), situated in the lower division

of the larynx or at the level of the cricoid cartilage—5. Tracheal stenoses, caused by outside pressure (by hypertrophied thyroid gland, aortic aneurism, large abscesses), constitute a but relative contra-indication, according to individual peculiarities of the case.—6. Contrary to the views of French surgeons, laryngotomy is by no means contra-indicated in children.—7. A prolonged wearing of the cannula after laryngotomy is apt to be followed by wasting of the cricothyroid muscle with consecutive corresponding functional disturbances (loss of high tones on vocalisation, etc.). The sequel is especially liable to occur in subjects with a narrow crico-thyroid space, and, after wearing a large-sized cannula. It may be prevented—at least, to a certain extent—by dividing the cricoid cartilage (simultaneously with the cricothyroid membrane) and inserting a middle-sized cannula. Still, in view of the risk, laryngotomy should be avoided “in all such cases (especially in singers) where the patient’s vocal apparatus is affected by the morbid process only to a slight degree, and where a complete restoration of the vocal functions can be reasonably expected.”—8. Laryngotomy—or rather wearing a laryngeal cannula—never gives rise to laryngeal perichondritis or ulceration of the laryngeal mucous membrane. An unduly bulky cannula, however, can sometimes (3 cases out of 211) cause hyperplasia of the membrane. The only peculiar complication of laryngotomy is constituted by fracture of a degenerated cricoid cartilage, which, however, occurs but very rarely (4 cases out of 211, ending lethally from other causes than the complication, which was detected only on the necropsy).

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