CROUP, IN ITS RELATION TO TRACHEOTOMY

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BY

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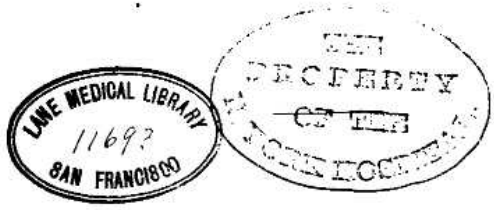

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THIS essay was read before the Philadelphia County Medical Society, January 14, 1874; referred by that Society to the Medical Society of the State of Pennsylvania; and by the latter Society, ordered to be printed in their Transactions for the current year. It is based on a careful study of the published records of more than five thousand cases of Tracheotomy in Croup, performed in various portions of the world.

CROUP,

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By Croup I mean *exudative inflammation of the air-passages*. Its relations to tracheotomy, as portrayed in this paper, include *sthenic croup*, or croup proper, and *systemic croup*, or the croup of diphtheria; but take no cognizance of *traumatic croup*, or that variety of exudative inflammation which ensues on the contact of ammonia, hydrochloric acid, and other vesicants. These three species of croup have one manifestation in common: the deposition of a pseudo-membrane, which appears to be identical physically, chemically, and microscopically.

The demand for aid to respiration is as urgent in diphtheritic as in sthenic croup; though, for obvious reasons, the ultimate success from an operation cannot be as great.

Tracheotomy for croup is generally regarded with much disfavor in this city. Its results in Philadelphia have been less encouraging than almost anywhere else; probably because, as a rule, the operation is postponed too long; possibly because our medicinal treatment of croup cures a number of cases which, under less efficient management, would become subjects for tracheotomy; but, whatever the cause, the results, in the comparatively few instances in which the operation has been performed, have been so disheartening, that many practitioners refuse to sanction tracheotomy in croup under any circumstances. This radical feeling is wrong. Not only should our individual experience be utilized in judgment, but the recorded experience of others also. Early failures may be followed by ultimate successes.

Barthez, in a letter to Rilliet[1] on the comparative results of the treatment of croup by tracheotomy and by medication during the years 1854–1858,

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[1] Gaz. hebd., Dec. 2, 1859; Brit. and For. Med.-Chir. Rev., April, 1860; Am. Journ. Med. Sci., July, 1860.

stated that the first year the Hôpital Sainte-Eugènie was opened, 13 croup patients were submitted to tracheotomy, of whom the first died during the operation, and 11 others in succession after the operation; the first recovery taking place in the thirteenth case. Yet Barthez had many successes afterwards; for in a letter published in 1868,[1] he stated that in the same hospital, between the years 1861–1867, 785 cases were operated upon, with 222 recoveries. Guersant lost his first 23 cases, between 1834–1841; but after that saved 17 out of 82.[2] Trousseau, up to 1842, had operated 119 times, with but 25 recoveries; but at a later date (1854) he reported 222 operations with 127 recoveries.[3] Similar examples of early want of success followed by results truly gratifying are on record. But there have been results even worse than these. Thus Trousseau, in a discussion on tracheotomy in croup, before the Academy of Medicine, in 1858, mentioned,[4] that in the earlier days of the operation, Gosselin, Deguise, Huguier, Jarjavay, and Monod, Jr., of Paris, performed 95 operations successively without a single recovery; that Alphonse Guérin, Michon, Laugier, Robert, Nélaton, Lenoir, and Depaul saved but 11 cases out of 117 operations; and Velpeau, Jobert, and Desormeaux but 16 out of 84. He attributed much of this want of success to the idea then prevalent that the surgeon's duty ended when he had opened the trachea.

That tracheotomy saves many croup-patients from death otherwise inevitable, and that, too, even under unfavorable circumstances, there has long been no reason to doubt: there is little doubt, either, that patients are occasionally tracheotomized unnecessarily; but the proportionately small number of such instances, whether errors of judgment or errors of prudence, is, in all probability, insignificant in comparison with the number of patients saved by the operation from certain death; life being preserved in the one instance, while it is not sacrificed in the other.

Tracheotomy, in itself, does not cure croup. It affords a possibility of recovery by postponing, or insures it by averting death. The course of the disease is continued until all its attendant phenomena have undergone evolution. The surgeon's knife merely cuts a path for air to reach the bronchi in quantity sufficient for the requirements of the respiratory process, and saves the muscular force, exhausted in futile efforts at respiration through the glottis. Is it not possible that the freedom of breathing, and consequent

[1] Gaz. méd. de Paris, 1868, p 449: in reply to a statement of Vacher.

[2] Bouvier; Bull. Acad. de méd., xxiv., 1858-9, pp. 188 and 192. In his Chirurgie des Enfants, Paris, 1864-7, Guersant says he saved but 2 out of his first 33 cases. Friedreich, in Virchow's Handbuch der speciellen Pathologie und Therapie; Erlangen, 1858, Bd. v., states that Guersant saved 31 out of 91 cases operated on in hospital and private practice.

[3] Friedreich, op. cit., p. 454.

[4] Bull. Acad. de méd., xxiv., 1858-9, p. 230.

conservation of strength, would aid the system to resist the full effects of the development of the disease, in the further production of exudation, or its plastic deposition upon the bronchial mucous membrane? Then the artificial opening affords a better means of escape for the false membrane, whether dispelled by cough or removed by instruments inserted through the wound; it enables a more efficient application of local remedies to retard the congelation of the exudation into membranes or casts; and thus facilitates the discharge of the plastic material by cough. In short, it gives the patient a chance, offered by no other means, to live and fight through the development and decline of the disease.

On the other hand, in some unhappy examples tracheotomy has been only a prelude to the post-mortem examination; while a number of instances are on record in which death occurred during its performance, even under the hands of skilful and experienced operators.

The chief objections to tracheotomy, apart from its infrequent success,—which, nevertheless, is as proportionately great as that in many so-called capital operations considered fully justifiable,—are certain accidents incident to the operation itself, and the methods of treatment after it. To these, attention will be given in a subsequent portion of this paper.

Modern medical literature teems with statistics as to the results of tracheotomies for croup; some presented in units, some in tens, some in hundreds, and some in thousands. Hundreds of individual cases have been recorded, with more or less detail. Their study leads but more and more to the conclusion that in croup, as in many more purely surgical affections, the decision as to the propriety of the operation must be made with reference to the individual case in question, rather than with regard to the proportionate number of recoveries reported in the journals.

Though the operation had been suggested by Asclepiades, it was not until 1782 that the first successful tracheotomy for croup was performed by John Andree,[1] in London. The second was by Thomas Chevalier, of London, in 1814.[2] Bretonneau followed in France, and after two unsuccessful cases in 1818 and 1820 respectively, performed a successful tracheotomy in 1825. In 1829 Prof. Stolz per-

[1] Farre; Appendix to a paper on Cynanche laryngea, Med.-Chir. Trans., iii. 1812, p. 335. (Borsieri; tome iv. Angina trachealis, § cccexxxvi.) Trousseau; Clin. Med., Sydenham Soc. Trans., vol. ii. p. 594.

[2] Account of a case of Croup in which the operation of bronchotomy was successful, Med.-Chir. Trans., vi. 1816, p. 151.