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Rhinology: 1900 to 1910

A Brief Survey and a Bibliography

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. . . the space of one man's life is insufficient for him to know anything but the rudiments of our art in many branches, and be, at the same time, in a position to advance in any degree the boundaries of its smallest province . . . we may pause (therefore) I trust (for) a just consideration and appreciation of the labor of our predecessors. Our knowledge has been built up . . . not by the mushroom activity of any one period, or of any one school of medicine, or by the premature birth of an idea or theory, but by the painstaking, laborious exertions of many generations of earnest men, working, for the most part, without expectation or perhaps desire; certainly without the attainment of those rewards, by which not only the layman, but alas, even the average member of our own art, measures what he calls success.

These words, written in 1902 by Jonathan Wright, concluded a lengthy survey of the story of our art covering a period of 5000 years.

The poetry editor John Ciardi,* in a recent essay emphasized that no great progress is made without a sense of the past as well as of the present. He says, "No painter can produce a good canvas without a broad knowledge of what has been painted before him. No architect can plan a meaningful building except as he has pondered the architecture of the past, and no writer can produce good writing without a sure sense of what has been accomplished in the past within his form."

From the history of rhinology, I have selected the first decade of the 20th century for reviewing because it seems to me to be a "golden period," during which the accomplishments of the past blossomed into their fullest glory and new seeds were developed and sown for flowering in the future. The rhinologic topics receiving much attention during this decade were septum surgery, rhinoplasty, anatomy, and physiology.

In the preceding years, operations on the septum were gross, destructive, crushing procedures involving mass movement and mutilation of bone, cartilage, and mucosa alike, which depended upon nature's healing properties for their justification and toleration. The crushing operation of Asch, the V-shaped incisions and excisions of Kyle, and the flap operations of Gleason were among the better known and most frequently used. However, Ingals in 1882, Krieg in 1889, and Boenninghaus in 1899 were already emphasizing the need of careful submucosal manipulation of the hard parts of the septum. Their work, together with the works of others, made possible the beautiful and significant presentations by Freer. The English version of Killian's classic article, "The Submucous Window Resection of the Nasal Septum," by E. Edwin Foster of New Bedford, Mass., was published in the *Annals of Otology, Rhinology and Laryngology,* 1905. Here are some of Killian's conclusions: "The essential feature of the technique is that I make by means of my long speculum a medial space in which I can as easily operate as in the inside of either nasal cavity . . . the experienced operator can rapidly remove large pieces. I can perform the whole operation in 20 minutes . . .," and his last conclusion is, "I have never had more enjoyment from any other small operation than

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from the described septum operation, and can most enthusiastically recommend it."

In the same issue of this journal, William Lincoln Ballenger first described the use of his swivel knife, which, he wrote "enables me to perform the operation in from 5 to 20 minutes . . . with the swivel knife the cartilage can be removed in 5 to 30 seconds." He described the use of a great many instruments, saying that "more instruments means more lacerations." His final justification for his presentation can be summed up in the following quotation: "After a reasonable experience it seems probable that the great majority of operations need not require more than 10 minutes. Killian claims an average of 20 minutes, while Freer by his methods claims an average of 45 minutes." This stress upon the time factor is quite revealing.

Important contributions were made by Hajek, Menzel, Leon E. White, Weil, Zarniko, Müller, Spratt, Beck, McCaw, Carter, MacCoy, Richardson, Sluder, and most of these were carefully studied by Freer in the course of this decade. He quoted from many in his articles, and apparently gave them serious consideration in estimating his own contributions. His conclusions from the article in 1905 should, in part at least, be restated and reevaluated:

1. The appearance of the deflections does not divide them into two great groups with distinct aspects, one obviously traumatic, and the other due to faulty growth as is taught by Killian . . this is merely confusing. . .

2. The window resection is adapted to children, but the chance of a possible recurrence from the effects of growth demands complete removal of the vestiges of deflection.

3. The firmness . . . of the septum is completely reproduced in the window after the resection (!!!).

4. Cases seen two and a half years after the operation show permanency of the result. (Note: 20 years is the time for evaluating permanency.)

5. Though the author (Freer) has never seen a case of sinking in of the nasal bridge after the nasal resection, Müller's and Menzel's warning should be heeded, to retain a strip of the cartilage of the septum under the lateral cartilages of the external nose. (Note: Also advised by Hajek.)

6. Lower portion of the quadrangular cartilage . . . may be resected without fear . . . (Note: Surely not so.)

7. The recumbent position of the patient is best for the operation, except in operating on the nasal floor.

8. The Kirstein light is the most suitable one.

9. The use of powdered cocaine. . .

10, 11, 12, and 13. Instruments.

14. Even if strictly subperichondrial, the elevation of the mucosa is apt to encounter adherent places that need separation by keen dissection. (This cannot be overstressed.)

15. The cutting out of denuded cartilage in one piece is the easiest part of my operation. (Note: When it is that easy, removal often can be avoided.)

16. . . . Neither cartilage nor bone should ever be broken, twisted, or torn from its attachment, but should always be cleanly cut away.

17. Instruments.

18. There is a tendency to hasty and incomplete removal of the bony part of the deflection.

19. Sewing is needless.

20. Packing.

21. Considering the many difficult bony resections met with, the author (Freer) does not think that the operation can be done in 20 minutes, the estimated time of Killian. (Note: Much more difficult by far is the freeing of the multifractured and distorted cartilaginous deflections, especially those mixed with bony deformities and scars in the anterior inferior part of the nasal septum.)

Freer was nurtured in the scientific atmosphere of Chicago which revolved primarily around Ingals. Freer's talented and industrious work affected all his colleagues. His accomplishments guided the younger men about him, but none were so effectively influenced as was Samuel Salinger, until recently also of Chicago, who I think became the direct successor of Freer and Ingals and brought to our times the finest scientific surveys of rhinologic literature and most significant contributions to the surgical advancement of our specialty.

An outstanding contribution was written by Dr. Sidney Yankauer of New York City (1906). He referred frequently to the work of Freer as well as many other contemporaries. He was especially aware of the difficulty of separating the anterior inferior border of the septal cartilage from the underlying bone. He described minutely the anatomy of this area and pointed out the

need for sharp severance of the soft tissues lying between the two structures before safe and adequate separation of the nasal mucous membrane on both sides could be accomplished.

It was pointed out by John N. McKenzie in the *New York Medical Journal,* 1905, that the craze for nasal operations had caused the pendulum to swing too far from rational boundaries: that the amount of reckless surgery in the nasal passages would never be known.

In the *Laryngoscope* of 1906 in a splendid critical and long review, John R. Winslow of Baltimore concluded that there is no single method suitable for every variety of deformity but all methods give good results in certain cases. It seemed to him that indications for the selection of each particular operation had not been sufficiently defined. He justly pointed out that the lack of detail in recorded cases would seem to indicate insufficient study; further, that the older methods had not met the requirements and had not proved entirely satisfactory. He made many significant observations, viz., "Inspection under cocaine anesthesia is essential to diagnosis, but inspection alone often yields erroneous impressions. The graduated probe is often the requisite to determine the extent of the deformity, the consistence of projections and the depth of concavity. The object of operation is the restoration of absolute symmetry." He concluded that conservatism and judgment in selection of cases are indispensable. He quoted Semon, "The magnitude of operations must not exceed the importance of the symptoms." He referred to the suggestion of C. W. Richardson of Washington that leaving splints in the nose for a period of 7 to 10 days after the operation simplified the after treatment. He quoted Roe, Bosworth, Hajek, Killian, Menzel, Janson, Freer, and Ballenger. He believed that the septum is not a mere partition but a support of the external nose. He described the operations of Harrison Allen in which the maxillary crest is severed by means of a small chisel placed beneath the upper lip, and the more extensive but similar operation by Lowe. He concluded that a knowledge of all methods is needed and that the older methods should be modernized if necessary, rather than abandoned, and that submucous operations of the nasal septum belong to the most difficult of operations, that they are indispensable and should be mastered by everyone who aspires to the title of the modern nasal surgeon.

In his presidential address to the American Laryngological, Rhinological, and Otological Society, 1904, Frederick C. Cobb of Boston said, "How numerous have been the operations devised upon the nasal septum, but how many of their originators will say in a medical meeting today that their methods have been improved upon."

Goodale and others in the Boston area, with the influence of the already familar work of Roe and Weir, probably created the groundwork for the development of interests in rhinology which were presented to the profession in the great works of Mosher. His (Mosher's) outstanding contribution at this period entitled "The Premaxillary Wings and Divisions of the Septum," presented at the 13th Annual Meeting of the American Laryngological, Rhinological and Otological Society in 1907, stressed the need for the study of the anatomy of the septum, the development of the premaxillae, and their relationship to the growth of the incisor teeth. Mosher described the relationship between deviated septa and delayed and irregular dentition; he illustrated examples of the deviation of the septum found in the dissecting room and showed some to be due to displacement of the premaxillary wings.

He discussed the relationship between the deformities of the palate and deviations of the septum and suggested that trauma is a cause of these abnormalities. Mosher was also concerned with the correction of old fractures of the nasal bones and knew that the usual methods of treatment were inadequate. His beautiful drawings show very clearly his "seeing through" a nasal de-

formity and recognizing its underlying concomitant septal derangements. He described a direct method of correcting lateral deformity of the nasal bones, employing external osteotomies, a method which with slight modification is still being used extensively today. He described in great detail the anatomical changes in nasal fractures in the external portion of the nose and of the septum and discussed many details for mobilizing the parts involved, emphasizing the need of handling the ascending process of the superior maxilla and also the deformities of the septum at one and the same time. He wrote that in most old fractures of the nose there is not only deformity of the nasal bones but also of the lower half of the nose or the cartilaginous parts. He added, "The anterior edge of the quadrangular cartilage is responsible for the support and so for the shape of the lower half of the bridge." Further he says, "In order to get the anterior edge of the quadrangular cartilage into the middle line, it is necessary to free it from the skin which lies over it and to replace its base." He tried to accomplish this by incisions through the septum and breaking the crests and forcing the septum into a new position and holding it there by considerable packing. He knew that this was not satisfactory very frequently and was prepared for secondary operations and concluded that the correction of the deformity of the cartilage is much harder and less sturdy than correction of the deformity of the nasal bones. Mosher's description and drawings of the anatomy of the septum of the infant and of the adult, with his emphasis of the part played by the premaxillae and their relationship to the quadrangular cartilage, the vomer, and the maxillary bone and his correlation of the growth of these structures with the growth of the palate, the maxillae, and the upper dental arch and dentition, will stand as a monumental contribution to the science of rhinology and as an inspired stimulus to all who would study this subject today. But Mosher in his publications after 1910 made no further reference to this work which he had so brilliantly inaugurated. And, I might add, as far as I know, further work by others along the lines of his original investigations was not done for several decades.

Chevalier Jackson in 1902 presented a discussion of why corrective operations of deviations of the nasal septum often failed. His article is splendidly written and well illustrated. He observed the relationship of sleep and rest to the position of the head and to the turgescence of the inferior turbinates, but was, in my opinion, incorrect in his conclusions that the swelling of the inferior turbinate, especially during sleep, pushed the septum and caused deviations. His conclusion on the inadequacy of the septum operation was that the surgeon had failed to remove a portion or all of the inferior turbinate on the concave side of the septum. He finished his article with this exhortation: "Let the skeptic not theorize—go cut out the turbinates." Yet Goodale in 1895 had emphasized the variations of the route of inspired air due to the shape and size of the vestibule, the inferior and middle turbinates, and the septum, and Ziem's article on the physiology of the inferior turbinate was soon to be published. Lothrop, Hartz, and others also had called attention to the functional importance of the inferior turbinates, and Courtade's graphic measurement of the permeability of the nasal fossae had appeared in 1902. Chevalier Jackson's conclusion after observing for two or three years his patients who, in addition to septal resection, had had some partial or total inferior turbinectomies, was that his patients had benefited greatly from the surgery. It may be repeated, I feel, that a careful scrutiny of nasal surgery a decade or two after it is performed is necessary before dependable scientific evaluations can be made.

The beginnings of rhinoplasty in early times and its gradual slow growth is fairly well known. A few brief remarks on some of the highlights may be made.

The Edwin Smyth Surgical Papyrus, 3000 B. C., mentions the treatment of nasal

fractures and the use of pressure dressings postoperatively. In 600 B. C. the time of Susruta, major restorations of the nose, repair of the nasal tip from cheek flaps and forehead flaps were done. The great Tagliacozzi brought to world notice the work of the Brancas and his own epochal efforts. The great master plastic surgeon of the 19th century, Diffenbach, was responsible for arousing further interest in partial and total reconstruction of the nose. He also straightened "twisted" noses. In 1887 John Roe of Rochester, N. Y., probably was the first to introduce intranasal incisions for rhinoplasty. He was concerned with the reduction of the bulbous tip and used cross hatching of nasal cartilages for mobilizing them and also was familiar with external molded splints. He might probably be the one to be called the originator of corrective rhinoplasty. He did hump removals; he used cocaine for local anesthesia. About the same time Robert Weir of New York was concerned with what may be termed minor rhinoplastic procedures and probably was the first to introduce the narrowing of the wide nose by means of excisions at the base of the nasal alae. He performed lateral osteotomies intranasally and used steel needles through the nose to hold the mobilized bones in place. He also reported the implantation in the nose of the breast bone of a young duck. Czerny in 1895 cut the superior portions of the upper lateral cartilages, bent them anteriorly to their attachments to fill in a depression in the dorsum of the nose—a procedure which was reported again 50 years later. As early as 1896 autogenous bone from the tibia was transplanted by Israel. He also transplanted autogenous cartilage from the ribs.

In 1902 Koenig used the combined free transplant from the ear to correct minor deformities of the nose, a method to be reviewed two generations later.

The great Jacques Joseph of Berlin at the beginning of this century was doing hump removal by excising V-shaped segments of skin, bone, and cartilage and was removing triangular wedges at the caudal end of the septum for shortening of the nose. In 1904 he reported on hump removal done completely intranasally through intercartilaginous incisions. He introduced the use of his right-angled saws for the intranasal lateral osteotomy, but perhaps one of his greatest contributions was his emphasis on the need of photographs and casts and good written records for both study and other scientific purposes. One of his articles in 1902 concludes with this very revealing observation, "Depressed unhappy people became gay, lively and interested in living after cosmetic surgery." This article concluded with the sentence telling of a patient who after saying goodby to him, turned back from the doorway and said, "You don't know how lucky and happy I am—nobody stares at me any more." At this time, the immortal Sigmund Freud was at the zenith of his creative achievements, but the works of these two great masters of medicine required two generations of further development before amalgamation of their experiences into a common arena of understanding could occur.

Joseph was conscious of the need for anatomical studies of the nasal septum. His concept of shortening the nose by means of shortening the septum led him to investigations concerning the septum even though he was not a rhinologist.

Transplants of autogenous, isogenous, and heterogenous bone were well known and used by Joseph and by many others of this period. In 1905 Welty reported a case of transplantation of the patient's tibia to the nose. He writes that he was about to report his operation as an original one, but on looking up the literature he had found that the identical operation had been satisfactorily performed by many before. Five years later the sacrifice of the second finger of the left hand as a nasal implant and graft was still being enthusiastically reported (Finney; McGraw). Goodale in 1901, however, used autogenous septum cartilage as implants for the correction of nasal deformities. He was

familiar with lateral osteotomies done intranasally and without completely sawing through the bone. He was one of the first to mobilize the nasal bones freely and to use external splints.

This first decade of the 20th century was also one in which great contributions to the anatomy and embryology of our specialty were being made and outstanding work previously published was being reintroduced to the profession. The rhinologist's own acute interest in septum, nasal, and sinus surgery was the magnet which attracted him to these basic sciences. Anatomical contributions of Zuckerkandl were outstanding. This great master prepared and studied sections of the head and nose, and his research in comparative anatomy of sinuses and other nasal structures gave us many fundamental concepts. He described the paraseptal cartilages, which of course led to the suggestion of their involvement in septal deformities. Onodi in Europe and Loeb in America made telling contributions to the anatomical knowledge of the nose and sinuses. Sudler from Johns Hopkins, Talbot, and Fawcett, among others, were vitalizing embryological investigations which were of important interest to rhinologists. The studies in physiology of the nose by Zwaardemaker and Mink provided in this decade all that was necessary for the development of extensive interest in nasal physiology and its relationship to the treatment of nasal diseases. In this country Hartz wrote about the peripheral stimulation of the nasal sensory nerves producing dilatation of nasal blood vessels while producing vascular contraction in other parts of the body. Anderson did research on dogs and found that occluding the nares resulted in loss of hair of the animal and that long after the stenosis was relieved the life span of the progeny was markedly reduced.

All of the foregoing and much more besides was going on 50 years ago, and yet on serious reflection all still seems important today. In the interim the newly developing advances in sinus surgery, otology, laryngology, and endoscopy absorbed the time and attention of the members of our specialty. Others took over much nasal surgery which the rhinologists had first explored and then partially abandoned. It is to the everlasting credit of Dr. Samuel Fomon that the otolaryngologist was made aware of his great heritage and of his need to concern himself again with the problem of nasal corrective surgery.

Perhaps the greatest lesson one can learn from this outstanding decade in rhinology is that advancements in medicine go on. Some of the past must be integrated into the needs and the knowledge of the present. Reevaluation and reassessing of the efforts of others and of ourselves is essential if the striving for the good and the true be our objective. Medicine, like all other forms of human activity, moves and changes, is dynamic, not static, and progresses ever onward toward a goal which may never be reached, but always is worth striving for.

As Jonathan Wright said, "Very frequently a new triumph of dexterity of invention in surgery leads to the erroneous assumption that a new era in the specialty has been inaugurated." We have seen many things considered original and new today which have been discovered or known long ago. Sir William Osler† reminded us, "The past is always with us, never to be escaped; it alone is enduring, but amidst the changes and chances which succeed one another so rapidly in this life, we are apt to live too much for the present and too much in the future. . . . It is good to hark back to the olden days and gratefully to recall the men whose labours in the past have made the present possible."

It is conceivable that our successors some time hence will again enjoy surveying the record of rhinology during this first decade of our century and I trust that it would not be too daring to hope that they may discover that a second "golden" decade flourished about 50 years later.

†Osler, W.: Aequanimitas; with other Addresses, Ed. 3, Philadelphia, The Blakiston Company, 1932, pp. 8-9.

Summary

Outstanding and significant contributions to nasal septum surgery, corrective nasal surgery, anatomy, and physiology were made during the first decade of the 20th century. The record of these achievements can be read with great profit today and is an inspiring stimulus for those working in these fields.

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