

## **Observations on cleft palate and on staphyloraphy / by W. Fergusson.**

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# OBSERVATIONS

ON

## CLEFT PALATE, AND ON STAPHYLOGRAPHY.

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THE subjects to which the following observations refer, have attracted considerable attention among surgeons during the last five-and-twenty years, since Graefe and Roux in Europe, and Warren in America, showed that the congenital deformity, might be successfully treated on principles similar to those which guide the practitioner in the management of hare-lip. It seems to me doubtful, however, whether our own countrymen have displayed equal zeal with our continental and transatlantic brethren in this department of surgery. It is true that most of our modern surgical authorities have taught the operation of staphyloraphy, and also that it has been performed frequently in different parts of Britain. Yet since it was first done in England by Mr. Alcock, in 1821, it cannot be said that the amount of either individual or collective experience on this proceeding is in just proportion to that acquired by surgeons in other parts of the world. It is known that more than two years ago, the distinguished author of the operation, Roux, had performed it upwards of one hundred times, with a most satisfactory amount of success,—two-thirds of the simple cases, and one third of those which were complicated, having derived benefit from the proceeding. In 1843, Dr. Mütter, of Philadelphia, had operated twenty-one times upon the soft and hard palate, and out of this number “had failed to relieve the patient but in two cases;” and up to the same year, Dr. J. Mason Warren, of Boston, had treated fourteen cases, in thirteen of which he had obtained most signal advantages from his judicious attempts to close the fissure by the operation in question. I am not aware that equal success has been achieved by any surgeon in these islands; and as far as my own personal experience extends the results have been, up to a recent date, so unsatisfactory that I have had little confidence in recommending the operation.

The condition of congenital defective palate, and the various operations which have been proposed to remedy such an evil, have not, so far as I am aware, been brought under the notice of this Society. The names of Graefe, Roux, Warren, Dieffenbach, Brodie, Guthrie, Liston, Bushe, Cusack, and Crampton, guarantee that the subjects have been



sufficiently interesting and important to attract some of the leading talent of the day, and I am not without hope that the purport of this paper will serve as my apology for occupying a portion of the time of this meeting.

The fissure in cleft palate may be such as only to divide the uvula, or it may extend forwards through the soft and hard parts as far as the lips; in which latter instance there is generally a hare-lip as well. In the uvula, soft palate, and even through the palate bones, as also a portion of the superior maxillæ, the fissure is invariably in the mesial line, but when the alveoli in front participate in the malformation, it is somewhat to one side. In certain instances the fissure is double in front, when the whole of it may be likened to the letter Y; the two lines in front leaving between them the intermaxillary bone.

When there is merely a bifid uvula, there are not any of those distressing circumstances which accompany the more extended fissure, and in such instances, no demand is made on the skill of the surgeon, or that of the artificer in obturators; but when the gap is longer, it is well known how eagerly the unfortunate party will have recourse to an apparatus, or submit to any operation, which may promise relief, as regards the tone of the voice and deglutition.

On the present occasion I shall only advert to the advantages which may be obtained in instances of single or double fissure extending through the entire hard palate, and when accompanied with hare-lip, by the judicious application of compresses, and also by the early performance of the operation for hare-lip. It is well-known that a gap, however wide, may, if treated in early life, be brought to the condition of a narrow chink, by the means alluded to; but we have no control over the fissure in the soft parts, save an artificial palate, unless by the operation of staphyloraphy.

Until within a very recent date, the cleft in the hard palate has been deemed beyond the reach of surgical skill, except by means of obturators, or by plastic operations, secondary to successful attempts upon the soft parts. Dr. J. M. Warren has shown, however, that the cleft, even in the hard palate, may be closed by an operation somewhat similar to that performed on the soft velum, but the proceeding has not, so far as I know, attracted any more than casual notice in this country. The remarkable feature in this gentleman's operation is, that he dissects the soft tissues from the bones on each side of the fissure, carrying his knife towards the alveoli to such an extent as to make a flap sufficiently broad to join its fellow in the mesial line; he then pares the edges of the cleft in the soft palate, and stitches the whole wound between the uvula and the anterior extremity, wherever it may be. If union takes place, the entire fissure is closed, and Dr. Warren has not alluded to any inconveniences or evil results from thus denuding the bones. Doubtless a considerable amount of reunion takes place, and towards the inner margins of the bones, as also on the upper surface of the soft portion in the middle, there will be a cicatrix, analogous to mucous membrane. Taking the vault of the hard palate in its natural condition, as being nearly semi-circular, it is evident that by bringing down the soft parts on each side towards the tongue, ample flaps may be obtained, so that there would be little or no dragging by the stitches. In the cleft condition,





this proposition is still more apparent, especially if the malformation extends through the alveoli, for then the surfaces of the hard palate slope upwards like the two sides of a triangle, and nearly join in the floor of the nostril.

Few have had the opportunity of dissecting a cleft palate, and some notice of a specimen in my possession will form an appropriate introduction to the views developed in this paper. The fissure in this instance implicates a portion of the hard as well as the whole soft palate, and is such as the surgeon frequently meets with in practice. The specimen was procured in the dissecting-room from the mouth of an aged female subject.

In the examination of this preparation there are several marked differences between it and the parts in a more natural state. The superior constrictor muscle is more fully developed than under ordinary circumstances, and its upper margin, extending between the basilar process of the occipital bone and the internal pterygoid plate, is particularly distinct. This part of the muscle forms a sort of semicircular loop, in which the levator palati muscle seems to be suspended.

The pharynx has been laid open by a perpendicular incision through the constrictors in the mesial line, and the moveable portion of the palate has been dissected on one side. The circumflexus, or tensor palati, differs little from the natural condition; and the levator palati is much as it is usually met with, its lower end spreading out in all directions on the soft palate. The palato-pharyngeus consists of two distinct bundles of fibres; one, the smaller of the two, running between the tensor and levator palati; the other, a mass equal in size to a goose quill, seems to form the principal part of the free portion of the palate; and posteriorly its fibres, previous to joining those of the other bundle, form the whole muscular portion of the posterior pillar of the fauces. This muscle arises by tendinous and fleshy fibres from the posterior margin of the osseous palate and the inner surface of the internal pterygoid plate, and takes its usual course and attachment posteriorly. A bundle of fibres, about the size of a crow quill, can be traced along the lower border of the inner margin of the soft flap. These fibres extend between the posterior margin of the hard palate and the uvula, and are probably analogous to the azygos uvule. The palato-glossus can scarcely be distinguished. A small arterial twig, doubtless a branch of the ascending pharyngeal artery, can be traced between the levator and tensor palati muscles. The throat and upper part of the pharynx generally is smaller than in the well formed state, but the deficiency in the mesial line of the palate seems more the result of a want of union, than of the usual materials of the velum.

The act of deglutition in the natural state of the parts, while food is passing through the upper end of the pharynx, has been a subject of considerable speculation among physiologists, especially with reference to the manner in which the communication betwixt that bag and the posterior nares is closed for the time being.

It has been pointed out by Dzondi and Müller that the palato-pharyngei muscles, when fixed in the soft tissues at their upper ends—as in the natural state of the velum—must, during contraction, tend towards the mesial line, and so by their approximation diminish the capacity of the



throat. But in the cleft state there is no central fixed line, and each muscle, acting between its extreme attachments, viz., the palatine bones above and the thyroid cartilage below, must, during a contraction, tend to widen the throat rather than close it. In the condition alluded to, these muscles, joined with the levatores palati, have the effect of enlarging the gap in the mesial line. It is evident that the doctrine of the above-named physiologists will not account for the closing of the aperture under these circumstances, and how then is the occlusion effected? I am not aware that it has ever been accounted for. Malgaigne,\* in describing the simple fissure of the palate, has alluded to the approximation of the edges during deglutition, "by a muscular action," as he says, "of which it is difficult to give an explanation." I think that any one who looks at the preparation in my possession can have no doubt as to this movement. The superior constrictor has evidently the power of throwing the two lateral portions of the palate forwards and inwards, so that they are forced into contact in the mesial line, and thus the back of the fissure is closed, while the constrictor is acting on the upper part of the pharynx, like a broad semicircular band. The upper border of this muscle, as it is seen in the preparation alluded to, must evidently have the effect described, and the lower fibres will act still more effectually, in consequence of there being no connection mesially to prevent them starting forwards during contraction, so as to stretch across, almost in a direct line, extending between the lateral attachments of each muscle. Some of the fibres of the middle constrictor may also aid in this movement. The palato-pharyngei muscles are thus forced into contact, and their ends, behind and below the parts so held in apposition, may then act in the manner described by Müller, while possibly the thickness of the two portions of the soft palate may be increased by the contraction of each palato-pharyngeal muscle at the points of contact. The azygos uvulæ may probably contribute to the latter effect.

It is not so much my object on the present occasion to dwell upon the physiology of deglutition, as to draw attention to the condition of cleft palate, and the operation of staphyloraphy. I shall, therefore, now proceed to notice what has hitherto been done by the surgeon with reference to these subjects, and to state the deductions which I have myself made from a consideration of the anatomy and physiology of the parts in question.

The operation originally performed by Roux, which was the first where the attempt by such a process succeeded, consisted in paring the edges of the fissure, and bringing them together by means of stitches, so that the cut surfaces might be united by the first intention. To keep the parts as still as possible, the patient was not allowed food of any sort, for two or three days, and was cautioned against any effort to swallow—even the saliva he was charged to let flow out of his mouth. With various modifications, as to the manner of paring the edges, introducing the stitches, tying the knots, the materials for ligatures, &c., the same proceeding has been followed by all other operators in similar cases, with the addition that extra incisions have been made by some, with the intention of facilitating the approximation of the edges of the fissure.

\* Manuel de Médecine opératoire. Paris, 1834; p. 486.



Dieffenbach\* was, I believe, the first to propose a longitudinal division of the flaps, between the alveoli and stitches; a proceeding which has also been recommended by Professor Pancoast of Philadelphia. As the last-named gentleman has written the fullest account of this process with which I am acquainted, I shall give the description in his own words, premising that the principal difference between this method and that of Dieffenbach is, that the latter gentleman secures the ligatures before he makes the additional wound. After paring the edges of the fissure and introducing the ligatures, "when the knots were prepared for tying, but before they were finally secured, Wenzel's cataract knife was passed from before backwards, through the attached sides of the palate, to enable the two halves of the velum to come together in the middle line, as well as to divide the insertion of the palate muscles, so as to prevent them straining the sutured edges of the palate asunder."† Mr. Liston‡ advises that, "before the ligatures are finally secured, the parts being put on the stretch, an incision should be made, on each side towards the alveolar ridge, through the anterior surface of the velum, by which method the edges come together more easily, and the strain is taken off the threads, so that there is less risk of these making their way out by ulceration." Dr. Mettauer, of Virginia,§ recommends methods somewhat similar to both the plans above described. He proposes to increase the breadth of the two flaps, by making a series of lunated incisions through the flaps, each about half an inch in length, along the margins of the fissure, which he causes to heal by granulation, and thereafter proceeds with the ordinary operation; or by another method, he relaxes the parts at the time of the operation, by making a longer incision on the lower surface of the palate on each side, but a little nearer the mesial line than that proposed by Mr. Liston.

Roux himself has added some additional incisions to his original proceeding. When the gap is wide, especially in cases where the hard palate is defective, by transverse incisions he separates the soft palate on each side from the posterior margin of the palatine plates of the palate bones, which permits the more ready approximation of the moveable parts towards the mesial line. A similar proceeding was also recommended by Mr. Bushe.|| I have already, in an early part of this paper, referred to the method followed by Dr. J. M. Warren¶ in instances of fissure of the hard palate; but he, too, deals with the soft parts behind in an unusual manner, which I must not omit to notice here. After describing his method of dissecting the soft tissues from the bones forming the roof of the mouth, he states that, "it will generally be found that by seizing the soft palate with a forceps, it can be easily brought to the mesial line. If the fissure is wide and this cannot be effected, I have found the following course to be invariably followed by success:—The soft parts being forcibly stretched, a pair of long powerful French scissors, curved on the flat side, are carried behind the anterior pillar of

\* *Lancet*, 1834-35, vol. i. page 695.

† *American Journal of Medical Science*, vol. xxxii. page 71.

‡ *Operative Surgery*. Second edition.

§ *American Journal of Medical Science*, vol. xxi. page 309.

|| *An Essay on the Operation for Cleft Palate*, by G. Bushe. New York, 1836.

¶ *New England Quarterly Journal of Medicine and Surgery*. April, 1843.



the palate ; its attachment to the tonsil and to the posterior pillar are now to be carefully cut away, on which the anterior soft parts will at once be found to expand, and an ample flap be provided for all desirable purposes."

Before adverting to the propriety of these incisions, I must request attention to certain conspicuous movements in the soft flaps, which may be noticed during the examination of the throat of a person whose palate is cleft. It matters not whether the cleft is in the soft parts only, or runs through the bones, too,—the soft tissues alone being susceptible of motion. As we look into the open mouth, the flaps may be seen under four different conditions. First. If the parts be not irritated in any way the gap will be quite conspicuous, the lateral flaps will be distinct, and the posterior nares, with the upper end of the pharynx, will be observed above and behind. Second. If the flaps be touched, they will in all probability be jerked upwards by a motion seemingly commencing at the middle of each. Third. If the parts be further irritated, as by pushing the finger against them into the fissure, each flap is forcibly drawn upwards and outwards, and can scarcely be distinguished from the rest of the parts, forming the sides of the nostrils and throat. And, Fourth. If the parts further back be irritated, as in the second act of deglutition, the margins of the fissure are forced together, by the action of the superior constrictor muscle, already described in my observations on this process in an earlier part of the paper.

All these conditions and movements are, in my opinion, very readily accounted for. In the first instance, the parts may be deemed in a quiescent state ; in the second, the *levator palati* are called into play, and move the flaps as described ; and in the third, these muscles act still more forcibly, and the *palato-pharyngei* will join in drawing the parts outwards. The fourth condition I need not again describe.

If the free margin on one side of the fissure be seized with the forceps, drawn towards the mesial line, and the flap be then irritated, it will be drawn upwards and outwards with remarkable force ; this movement, it is evident, can only be effected by two muscles—the *levator palati* and *palato-pharyngeus*. These muscles, then, I consider the chief mechanical obstacles to the junction of the margins in the mesial line. Hitherto I have taken no notice of the action of the *circumflexus*, or *tensor palati*. I am inclined to think that its action is very limited, and probably, as the dissection in my possession would indicate, is greater upon the parts outside the posterior pillar, than on those contiguous to the fissure. Neither have I alluded specially to the action of the *palato-glossus*, because, though it might with a feeble power incline the soft palate downwards, its influence, as regards the practical view I am now taking, is completely counteracted by the more powerful muscles connected with the palate above.

We may now look to the probable immediate effects of the incisions which have been recommended to facilitate approximation. In Mettauer's, the small wounds are made in the course of the main portion of the *palato-pharyngeus* muscle. It may be doubted if this muscle be much impaired in action by such a process ; but even granting this, and also that the breadth of each flap is considerably increased, the *levator palati* is still left to drag the parts upwards and outwards. The long



incision through the mucous membrane, recommended by the same party, will obviously not reach any muscular fibres of importance. The incisions by Dieffenbach and Pancoast will scarcely touch the fibres of the palato-pharyngeus, the greater portion of that muscle passing between the incisions and the median line; and here, too, the levator palati is left almost untouched, for only a few of its fibres will be reached by such a wound. The incision recommended by Mr. Liston has evidently no reference to division of muscular fibres, and both the levator and palato-pharyngeus are left untouched. In Roux's proceeding, the anterior attachment of the palato-pharyngeus is certainly cut away, but it is questionable if the act does not give easier play to the levator palati; and at best, if it does facilitate union in the mesial line, it is at the expense of a transverse gap between the bones and soft parts, which I imagine, notwithstanding Mr. Bushe's favourable report, probably continues partially open ever after. Dr. J. M. Warren, so far as I can understand his description, only separates the anterior pillar from the tonsil and posterior pillar, and makes no allusion to the division of muscular fibres. Possibly, however, by the clipping process which he describes, some of the fibres of the palato-pharyngeus may be divided.

Dr. Pancoast, in the language already quoted, certainly proposes "to divide the insertion of the palate muscles," but, as my demonstration proves, he cannot touch the insertion of one muscle, and can only reach the other, or a part of it, by hazard; and so indefinite has been the language used by all parties, with reference to the object of these different incisions, that I believe myself justified in stating that a distinct proposal, founded on anatomical and physiological data, has never yet been made. It has been one of my objects in drawing up this paper to do so, and I have ventured to bring the whole subject under the notice of this Society, in the hope that the novelties which it contains, with reference to the anatomy and physiology, as well as the operative proceedings immediately to be considered, may attract a share of attention from English surgeons, equivalent to that exhibited in other parts of the world, and sufficient to test the value of my views and proposals in point of practical importance.

I imagine that few who have listened to this paper throughout, will have any difficulty in anticipating what my proposals will be. I therefore, without further preamble, propose, as an important accessory to the operation of staphyloraphy, that the surgeon should, on strictly scientific grounds, and in accordance with the modern principles of myotomy, so conduct his incisions as to destroy all motory power in the soft palate for the time being, and thus permit that repose of the stretched velum which is so essential to a happy result; in other words, I advise the division of the levator palati, the palato-pharyngeus, and the palato-glossus muscles. The first of these steps I deem of the greatest importance, the second scarcely less so, and the third may be effected or not, as the circumstances seem to demand.

It will be observed that, by dividing the above-named muscles, all motory influence in an outward, upward, or downward direction, is cut off, and the only muscles which can act in anything like a direct manner upon the soft palate are the superior constrictors of the pharynx. These,



however, will only act during deglutition, and even then their tendency will be to throw the parts closer instead of separating them.

We all know that union by the first intention occasionally fails, even under circumstances the most favourable; and though not sanguine enough to suppose that what I now advance will, in all instances, insure success, I feel satisfied that my proposals answer an important desideratum. It has been remarked, during the operation of staphyloraphy, that after the edges of the fissure have been pared, there has often been difficulty in distinguishing the flaps, so completely have they been drawn to each side. Even after this has been done, the gap, according to the proceeding which I follow, is actually less than before the operation; and in closing the wound with the stitches, there is no dragging effort required to bring the edges into apposition.

The incisions necessary for the division of the three muscles are probably less in extent than those which have been practised, and their immediate effect will also be more decided; ultimately, after the wounds have united, the re-union of fibres is so complete that any inconvenience which might be anticipated from the temporary division of the muscles is scarcely to be perceived.

Whilst writing these observations I have examined a palate which had been successfully treated, ten months ago, on the method here propounded, and the motion upwards, such as is seen in the normal palate from the action of the levator palati, as also the effects produced by the palato-pharyngeus, as well as palato-glossus, are such as may usually be seen in the parts naturally well formed.

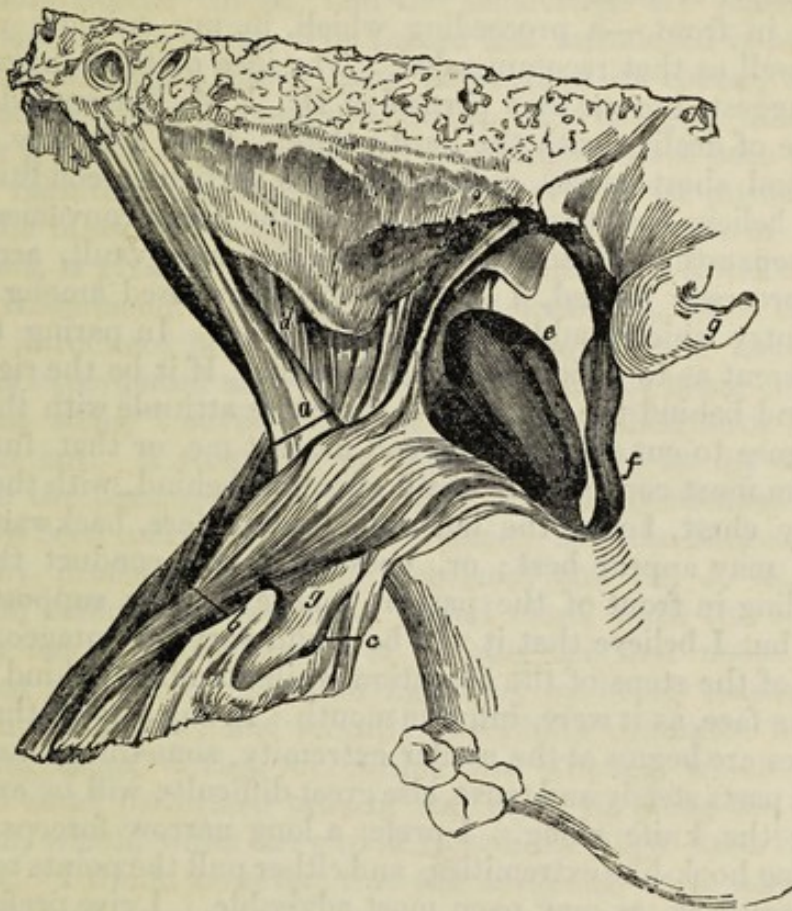
Within the last twelve months I have operated on two cases of congenital cleft palate, in accordance with the views developed in this paper, and the results have been most satisfactory, as regards the union of the lateral portions.

The steps which I follow are these:—With a knife whose blade is somewhat like the point of a lancet, the cutting edge being about a quarter of an inch in extent, and the flat surface being bent semicircularly, I make an incision about half an inch long, on each side of the posterior nares, a little above and parallel with the palatine flaps, and across a line straight downwards from the lower opening of the Eustachian tube,\* by which I divide the levator palati muscle on both sides, just above its attachment to the palate. Next I pare the edges of the fissure with a straight blunt-pointed bistoury, removing little more than the mucous membrane; then, with a pair of long blunt-pointed curved scissors, I divide the posterior pillar of the fauces, immediately behind the tonsil, and, if it seems necessary, cut across the anterior pillar, too; the wound in each part being about a quarter of an inch in extent. Lastly, the stitches are introduced by means of a curved needle, set in a

\* The cut represents the posterior and upper surface of one edge of the soft palate. *a*, the levator palati; the dark line shows where it should be cut across. *b*, the inner bundle of fibres of the palato-pharyngeus forming the posterior pillar of the fauces; the black line indicates the place for division. *c*, the palato glossus, with the mark for incision, if one should be deemed necessary. The tonsil lies between these two muscles. *d*, the tensor palati, the cartilaginous extremity of the Eustachian tube is in front of this letter. *e*, the posterior extremity of the inferior turbinated bone. *f*, the septum. *gg*, the uvula on each side stretched apart.



handle ; and, the threads being tied so as to keep the cut edges of the fissure accurately in contact, the operation is completed. These dif-



ferent incisions may be made in the order here detailed, or possibly it may be found most convenient to divide the palato-pharyngeus first, next the levator palati, and then to pare the edges when the muscular action has been taken off.

Each of these steps requires some little separate notice. The first incision, it will be remarked, differs from all others hitherto proposed, and is founded on consideration of the anatomy of the parts. The levator palati, I have no doubt, is the main obstacle to the approximation of the margins, and is the principal cause of unsteadiness in the velum during the operation and after it has been accomplished. Its division may be effected through the method above recommended, but should the flap appear tense after the knife has been used, the incision may be further extended in case the muscle may not have been completely cut across. The extension of the incision, even without reference to the division of muscular fibres, will aid greatly in relaxing the sides of the palate. In many instances, I believe that the levator muscle might be divided by a submucous incision, by plunging the blade through the mucous covering, and then moving it freely across the muscle.

The instructions already given, will, I imagine, enable the operator to reach the muscle with facility. I may add, however, that the incision should be made about midway between the hard palate and the posterior margin of the soft flap, just above the thickest and most prominent part of the margin of the cleft. The instrument used for this step is of



peculiar construction. No ordinary surgical knife could have readily effected the purpose, as it is scarcely possible to apply the point of a common scalpel or bistoury to the part in question, excepting through the nostril in front,—a proceeding which, in my opinion, would not answer so well as that recommended. The idea of this shape of knife was first suggested to me by a perusal of Dr. J. M. Warren's description of his mode of dealing with the hard palate. I use a variety of blades with long and short curves, each to suit the particular condition of the parts, and believe that these will be found the most convenient instruments for separating the soft tissues from the hard vault, according to Warren's process : indeed, I know of no others used among surgeons in this country which could effect this purpose. In paring the edges, I am indifferent as to which side I begin with. If it be the right side, I usually stand behind the patient,—a favourite attitude with the dentist, and commence to cut either at the end nearest me, or that furthest off, as may seem most convenient. Still standing behind, with the patient's head on my chest, I pare the left side from before, backwards, or the reverse, as may appear best ; or, possibly, I may conduct these steps while standing in front of the patient, whose head is supported by an assistant ; but I believe that it will be found very advantageous to conduct many of the steps of the operation while standing behind and looking over the face, as it were, into the mouth. In any way, if the incisions on the edges are begun at the uvular extremity, something must be done to keep the parts steady and tense, else great difficulty will be experienced in carrying the knife along. I prefer a long narrow forceps, with the blades having hook-like extremities, and either pull the points towards me or push them back, as may seem most advisable. I give preference to a straight probe-pointed bistoury, as the best instrument for this part of the operation. When the edges are pared, I am in the habit of again using the curved knife which has just been described. The edge at some parts will appear so thin that one may doubt whether union is likely to take place when two such surfaces are brought into apposition. To increase the breadth or depth of such parts, I run the point of the curved blade along the middle of the cut surface, and thus, when the edges are brought into contact, they are expanded, and the depth from the nasal surface to the lingual is increased, whereby there is greater probability of union. I have succeeded in this way in closing a portion of a gap where the edges were originally not thicker than a sixpence. In dividing the pillars of the fauces, the uvula, or the posterior margin of the velum, should be seized with the forceps, and so drawn forwards as to put these parts on the stretch. The relaxation of the flaps will be the criterion as to the muscles being divided. Judging from the anatomy, and what I have seen in the living body, I should say that it will seldom be necessary to meddle with the anterior pillars.

After having used, or examined most of the contrivances for passing the threads, I give decided preference to the curved needle set in a handle, the eye being near the point, so that the thread may be seen and laid hold of readily as soon as the parts have been transfixed. The first three or four stitches I now always introduce thus :—I pass the curved needle from below, straight upwards, being indifferent as to which side I begin with. And then, having carried the eye towards



the mesial line, so that the ligature can be seized with the forceps and drawn down into the mouth, the needle is withdrawn, armed again with a more slender thread, and the same steps are repeated on the opposite side of the cleft. The thread last introduced is next fastened to the first, and then drawn back throughout its course, whereby the first thread, which is the one intended to close the gap, is brought into its proper position. After three or four stitches have been tied, should more be required, the curved needle can readily be pushed from one side to the other. I imagine that the difficult process of introducing the threads, is greatly facilitated by the preliminary division of muscles which I recommend. Having, on some occasions, when the ligatures had been introduced before the edges were pared, (the course followed by Roux,) experienced annoyance from the threads being cut during the subsequent steps, I advise that they be not applied until the margins have been cut. A stout silk or flaxen thread is, in my opinion, preferable to the ligatures of leaden wire used by Dieffenbach, although these have been much applauded by some; and the surgeons' knot, as advised by professor Smith of Maryland, and Dr. J. M. Warren, I have found sufficient to keep the wound close, until the second noose had been cast. The difficulty of keeping the first noose steady has often been alluded to: the lead ligatures, by being twisted together, obviate this difficulty; and recently, Sir Philip Crampton has proposed a most ingenious device for closing the stitches, which consists in running a small perforated bead of soft metal up along the two ends of the thread, which, when the gap is closed, are then fixed by squeezing the metal. I think, however, that the surgeons' knot answers all the purpose desired; and, in my own operation there is so little dragging, in consequence of the flaccid condition of the palate, that I have occasionally found the common knot answer perfectly. For the same reason, too, I have not thought it necessary to resort to the use of any of those pieces of mechanism intended to facilitate the tying of a knot in a deep-seated part; for, after the muscles of the palate have been divided, the soft flaps can be drawn downwards and forwards, with all requisite facility. I believe it better, rather to exceed the proper number of stitches than to have too few, and I especially recommend that a stitch be used close to the lower end of the uvula, as otherwise there is here a great tendency to separation.

The after-treatment which I have pursued, has been much the same as that recommended by Roux and most others. The patient has been desired not to speak or swallow for the first two or three days; the stitches have been removed, some on the second day, others not till the third, fourth, or sixth, as seemed most advisable; and generally the treatment has been conducted on ordinary principles. I have observed benefit from the use of enemata of gruel and strong soups.

With the exception of two cases recently treated by Sir Philip Crampton,\* I believe that it has been the invariable custom to withhold all food for some days. That gentleman, however, permitted his patients to partake "of boiled bread and milk, custard, soups and jelly, twice or thrice a day," and moreover the patients were not confined to

\* Dublin Journal of Medical Science, July 1st, 1843, vol. xxii.



bed. The latter part of the treatment has been acted on before; and, in my estimation, the generous method of the distinguished Surgeon-General is worthy of consideration, especially as it has been followed by success, and also that the starving system, besides being occasionally followed by evil results, is that part of the treatment most distressing to the generality of patients.

It will be observed, that the large vessels and nerves passing through the base of the cranium in this vicinity are all behind and above the incisions which I recommend. In meddling with the pillars of the fauces there cannot be the smallest danger; and if the knife be properly placed above the palate, there is nothing between it and the pterygoid plates of bone but the levator and the tensor palati. I have traced, after a good injection, the ascending pharyngeal artery passing forwards between these two muscles,—doubtless the same branch as that which has been already referred to in the dissection of the cleft palate,—but have not experienced any annoyance from bleeding from this quarter in the living body. It is well known that incisions in the mucous membrane will bleed more freely in some persons than in others; but all authorities agree that vexatious hæmorrhage has never yet happened in any case of staphyloraphy, nor should I apprehend any from the proceedings above described.

The variety of wounds may seem objectionable, but I doubt if they equal in extent such incisions as have been advised by others. These, in whatever manner they are made, must doubtless increase the inflammation that ensues. In the first example where I put my own method into execution, a small slough formed on the posterior margin of one of the flaps, and the gap opened again throughout more than one half its extent. The result here might have been possibly occasioned in the manner alluded to, but it is more probable that it was in consequence of the patient being in an indifferent state of health at the time. Three months afterwards the part which had opened was again operated on: the edges of the fissure were alone meddled with, for notwithstanding the double paring, they could be approximated with the utmost facility. The immediate union was complete, with the exception of a very small chink in front, which has since contracted so much, that the point of a common probe can scarcely be passed through it.

Entertaining, as I do, a strong feeling that the results of an operation are more valuable tests of its efficiency than any reasoning, however plausible, I shall for the present be satisfied to leave the estimate of these proposals to the consideration of my professional brethren who may feel interested in the subject.



## APPENDIX.

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The following are the Cases referred to in the preceding paper :

*Case 1.*—Mr. D. P., ætat. 17, has a congenital fissure in the palate, extending through the soft velum. Swallows with facility, but articulates very imperfectly. The sound of the voice is very unpleasant, and many of his words are unintelligible. The parts are not easily irritated by the fingers, and there is no disposition to vomit induced by touching the parts.

16th January, 1844. The operation was performed to-day at one, p.m., according to the descriptions in the preceding pages. Three stitches were used. In the evening had a pint of thick gruel, as an enema. At noon, on the 17th, had the same quantity of beef tea, per anum; which was repeated in the evening, with the addition of a glassful of sherry. Same evening the anterior stitch was removed.

18th. At noon, and in the evening, had the beef tea and wine, as before.

19th. Has swallowed a cup of beef tea this morning, and at noon the remaining stitches were removed. Wound has seemingly united throughout. A small portion of the posterior margin of the left side of the palate seems about to slough. Patient has been permitted to swallow beef tea at will, but has declined doing so, partly from pain and from the dread of causing the parts to separate.

20th. 9 A.M. The slough, as indicated yesterday, has separated. Union not so firm. At five, p.m., wound has opened to within half an inch of its anterior extremity.

29th. During the last eight days, the margins of the flaps have healed, and the union of the anterior part of the gap, to the extent of half an inch, has become firm. The patient left town this morning, with the intention of submitting to a second operation at a future period. The tone of his voice is slightly improved, but his articulation seems much as before.

March, 1844. On the 19th of this month the edges of the gap were again pared, and brought together by three stitches. The treatment afterwards was the same as that above detailed. The wound united throughout, and in fifteen days the patient left town again, the parts being firmly united, with the exception of a very small chink in front, which was diminishing daily.

Six months afterwards Mr. P. had made no improvement in his speech, when he put himself under the tuition of Mr. Hunt, of Regent-street. In the course of a few weeks an extraordinary change was effected, and, ere long, the articulation was so different, that little more could be desired.



*Case 2.*—Miss W., ætat. 18, has congenital split palate, extending through the soft velum, and a fourth of an inch through the bones. Circumstances much the same as in the preceding case.

16th October, 1844. Performed operation to-day, at 2 o'clock, P.M., as in the first proceeding in the case above detailed. In addition, however, the soft part of the palate was detached from the bones for the space of a quarter of an inch, or more, from the margin of the fissure towards the alveoli. Eight stitches were used, and the cut margins were very accurately adjusted.

19th. All the stitches removed to-day, and the wound has closed throughout. Patient permitted to swallow beef tea.

22nd. About half an inch of the anterior part of the wound has opened, the rest looking remarkably well.

In a few days more, as the margins of the little gap in front began to cicatrise, the aperture became less, and, after several applications of a heated iron, the aperture became so small that there was every prospect of its closing entirely.

In both of these cases, as soon as the incisions for the division of the levator muscles were completed, the soft parts were so much relaxed, that the gap was manifestly smaller than before; and during the subsequent steps of the operation, the flaps remained as flaccid as portions of skin on the margins of a wound. In the second operation on Mr. P., it was not deemed necessary to repeat the incisions above the flaps, as the levator muscles seemed, as yet, to have little or no influence. When this patient went to Mr. Hunt, the palate seemed little different from one which had been naturally well formed, excepting that there was no uvula, and the levator muscles seemed to have regained their power upon the velum.

In each case, the soft palate remained hard and somewhat thickened for months after the operation; and, on this account, the young lady (Case 2) has as yet made little progress in speaking. The tone of her voice, however, is much improved, and I have no doubt that the result will be as satisfactory as in the other instance.