HYPERTROPHY AND PROLAPSE

OF

THE TONGUE.

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MARGARET KELLY, æt. 11, was sent from the Isle of Man, by Dr. Kemp, to be treated in Addenbrooke's Hospital, May, 1847. I learnt from the mother that when the child was between two and three years old she had sore throat and hooping-cough; that powders were then given, which made the mouth sore and the tongue swollen; that during a fit of coughing the swollen tongue protruded from the mouth, and remained so. She recovered her health, but the tongue continued to increase in size up to the time of her admission into the hospital.

At that time the enlarged tongue (pl. I)¹ hung from the mouth over the chin in front of the neck, measuring from the upper lip to its tip $3\frac{1}{2}$ inches; from the under lip to its tip $1\frac{1}{2}$ inch; from the angle of the mouth, round the sides and tip to the opposite angle, $6\frac{1}{4}$ inches. The circumference of the widest part, which was about the middle of the protruded portion, measured $6\frac{1}{2}$ inches circular measurement;

¹ Taken from a drawing, for which I am indebted to my friend Mr. Bailey, surgeon, Cambridge.

immediately within the lips, 5 inches. When drawn into the mouth to the utmost possible extent the tongue measured from the upper lip to its tip 2 inches. The organ was soft and supple, having been kept habitually covered in a bag slung from the head. It presented no ulceration or apparent traces of inflammatory or other disease, except simple hypertrophy. The papillæ were greatly enlarged and separated by deep clefts, giving to the exterior of the mass a coarsely granular or warty appearance. This appearance was not confined to the prolapsing portion; it extended also to the part of the tongue contained within the mouth, though in a somewhat less degree. The colour of the organ was natural, or nearly so. The opening of the mouth was large: the lower lip everted, and the angles of the mouth depressed, so as to elongate and give a peculiar expression to the face. The orifices of the sublingual ducts, of unusual size, were situated just in front of the edge of the lip. The saliva was continually dripping from the end of the tongue; the quantity thus lost amounting, during the day, to more than half a pint.

Owing to the constant pressure of the tongue on the mental portion of the lower jaw, a curvature had taken place in that bone, just in front of the masseter muscles, in such a manner that a wide interval (pl. II) always existed between the incisors and bicuspid of the two jaws. Even when the mouth was closed, that is to say when the corresponding molar teeth were in contact, this interval between the incisors measured nearly two inches, being increased by the horizontal direction which the inferior incisors and the alveolar process of the lower jaw had assumed. These were so placed as to form a wide channel in which the tongue rested. Moreover, the teeth, especially the two central incisors, were farther apart than natural, and encrusted with tartar, which in some measure filled up the spaces between them, and prevented their sharp edges from injuriously pressing upon the tongue. In consequence of this altered configuration of the jaw, and the horizontal position of the front teeth, sufficient space was left

for the tongue to hang out of the mouth, although the superior and inferior molars were in contact. Even mastication with these hinder teeth could be effected without any injury or compression of the protruding organ.

The os hyoides retained nearly its natural position with relation to the jaw, and there was nothing remarkable in the throat or neck. The gums were swollen and spongy.

The child could masticate and swallow with tolerable ease. She bit soft substances between the upper lip and the tongue, and by the movements of the latter and of the lips contrived to roll the morsel about the mouth. Her speech was very thick and indistinct, though intelligible. She suffered no pain, but could not bear to be seen, and was exceedingly anxious to be rid of her deformity.

It being clear that the removal of the prolapsing portion offered the most expeditious and certain, if not the only effectual, mode of relieving the child from her distressing malady, and the knife offering many advantages over the ligature, I passed a straight bistoury from below upwards, through the organ a little to the left of the mesial line, and cutting forwards and outwards formed a left lateral flap; secured a vessel; next I cut across the middle of the tongue, dividing the ranine arteries, the movements of the organ being still controlled by means of the prolapsing portion, which was not yet quite severed. The operation was completed by the formation of an oblique lateral flap on the right side, corresponding with that on the left. These flaps were approximated so as to form a tip, and maintained in apposition by two sutures passed deeply. The execution of these proceedings was, of course, much facilitated by the wide interval that existed between the incisor teeth. The hæmorrhage was not very great, and the bleeding vessels were tied without difficulty.

A good deal of swelling of the tongue followed the operation; but under frequent washing and fomentation it soon subsided, and the wound healed. At first the lips could not be approximated, and the thick stump of tongue was always visible, though never protruding. After a few days, however, by

the continued action of the orbicularis muscle, the mouth was closed. I carefully cleared away the tartar from the incisor teeth, and placed between them and the lower lip small pads of linen to prevent the mucous membrane of the latter suffering from pressure against their sharp edges. It was not long before they assumed their natural direction. The jaw also began to recover its proper shape. To expedite the latter process I had a cap made of stout calico and metal, with a hooked bar of iron projecting from it, like a horn, over the forehead. This bar was attached to the hinder part of the frame-work of the cap by a hinge, and to the forepart by a screw, which enabled me to alter its elevation according to circumstances. A thick belt of India-rubber passed from the hook underneath the chin and exerted constant pressure upon it. The apparatus was worn for several hours at a time, and doubtless contributed to bring about the improvement which took place. When its use was commenced on January 18th, four months after the operation, the interval between the maxillary alveoli was $1\frac{1}{8}$ inch, having decreased about a quarter of an inch. On February 22d it was $1\frac{1}{4}$ inch. In August $\frac{7}{8}$ inch. After this the change took place very slowly, though the deformity was at length almost removed. The remaining portion of the tongue underwent considerable reduction in size during the first few months after the operation; then became stationary. Great improvement took place in her speech. She returned to her home in September, 1849, having, for about a year previously, lived as servant in my house, at the latter part of which time the only defect observable by strangers was a slight thickness in her speech. A friend who visited her in the Island in the summer of 1852, found her quite well.

When I was a student at the Norwich Hospital, in the year 1837, a case corresponding with the above in almost every particular, except that the prolapsing organ was not quite so large, was treated by Mr. Crosse, who devoted much time and attention to the subject, collected informa-

tion from various quarters with his usual assiduity, and intended to have written a memoir upon it. The following is a brief outline of the case :¹

Sarah Cole, æt. 6, from Dickleburgh, in Norfolk, had at birth, under the tongue, a small ranula, which was opened by a surgeon; afterwards the tongue enlarged. No treatment being adopted, the organ continued to increase in size, and ultimately hung out of the mouth. At the time of her admission into the hospital it measured from the upper lip to the tip, 3 inches; circular measurement, 5 inches. She could articulate intelligibly. The changes in the lower jaw and teeth, and the general appearance of the tongue, were the same as in the preceding case. Mr. Crosse at first contemplated removing the part by ligature, fearing hæmorrhage if the knife were used; but happening to see a paper by Lassus, he determined to try pressure, being influenced by the strong terms in which that treatment is there recommended, and the cases adduced in its favour. The application of a few leeches caused an increase in the swelling, and was not repeated.

October 5th.—A bandage, soaked in solution of alum, was placed round the tongue, so as to effect moderately firm compression. This was covered with oil-silk, and the whole enclosed in a sling attached to a linen cap fitted to the head. Liquid food was given through an elastic tube, so as to prevent the necessity of the removal of the bandages, which were renewed every morning. The child was laid on her back. After this treatment had been perseveringly continued for seventeen days, the tongue was so much reduced in size that it could without difficulty be replaced in the mouth: no part projected beyond the lips, though the latter could not be closed. The circular bandage was now discontinued, and the tongue kept in the mouth by a linen bandage passed over it.

November 12th.—The child could approximate the lips

¹ There is a cast of the face in the Pathological Museum of the University of Cambridge.

so as to close the mouth; the still-enlarged tongue caused bulging of the cheeks on either side.

January 3d, 1838.—The bandages were left off all day, and an elastic strap, passing under the chin and over the head, for the purpose of elevating the mental portion of the jaw, was worn instead. In consequence of the altered shape of the lower jaw, a constrained effort of the orbicularis muscle was still required to close the mouth, which gave to the oral aperture a circular shape and puckered outline.

February 15th.—She was made out-patient, with directions to continue the use of the chin-strap.

June 2d.—The child was re-admitted, with the tongue swollen, and prolapsing nearly as bad as ever; the relapse attributed to severe cold and cough. No improvement in the shape of the jaw since her first admission. The former treatment was pursued, and in five days the tongue was again in the mouth. The case went on favorably till May 15th, when the child became sick and feverish, and the tongue again protruded to the same extent as formerly. This attack subsided, and the tongue was a third time reduced within the confines of the lips. I am not aware of any subsequent relapse.

The child remained under Mr. Crosse's care till August, 1839, when the tongue was still large, though kept within the lips; the chin-strap was still worn; and a bandage was kept over the mouth at night. Some elevation of the mental portion of the jaw had taken place, and three permanent incisors had sprung up in a natural direction in place of the milk teeth, which had been extracted, or had fallen out. In this condition the child again went home, and I saw no more of her. A letter from Mr. Harrison, surgeon, Diss, dated July 8th, 1851, informed me that at that time the tongue remained perfectly in the mouth, although, when she spoke, it was perceptible slightly beyond the teeth. The articulation was thick, though distinct. The jaws appeared in a natural state.

My friend, Mr. Ormerod, told me of a similar case at

Oxford; and when I was in that city, at the meeting of the Provincial Medical and Surgical Association, not long ago, Mr. Hester kindly took me to see it. It corresponded in all important particulars with the two preceding; but the tongue was not proportionately so large. It projected from the mouth about $2\frac{1}{2}$ inches; was dry on the surface, but its substance was soft, and it presented no ulceration or sign of inflammatory disease. The lower lip was everted; the lower jaw bent, so that mastication could be effected only between the hinder teeth. The incisors had been extracted long ago. The woman (æ. 46) could speak quite intelligibly, only a little thick. Her mother had told her that the tongue was at birth of natural size; that a gathering took place when she was an infant, and the tongue swelled; it got better, but, in consequence of another gathering, it swelled again, and had remained out of the mouth ever since, being sometimes much larger than at others. A variety of applications had been tried, but no systematic treatment adopted. The poor woman was very anxious to be relieved from her malady, and ready to submit to any plan that offered a reasonable prospect of success.

The disease illustrated by these cases appears to be one of simple nature, consisting merely of hypertrophy of the tissues of the tongue. The amputated portion in that first described showed that nearly all the tissues had participated in the change. The mucous membrane in particular was much thickened, and thrown up into large, closely-crowded, branched processes, corresponding with the papillæ. It was not quite clear that the proper muscular structure itself had undergone any hypertrophy. The fibres of that tissue, presenting perfectly natural appearance under the microscope, were arranged in coarse bundles, rendered strong and tough by thick areolar and fibrous investments. These thickened structures were not interwoven quite so closely as in the healthy tongue, the interstices for blood-vessels and fluids being rather larger and more numerous than usual; but I could discover no trace of any morbid product.

In all three cases the affection was traceable to an inflammatory attack in the first instance. Subsequently, the unnatural and dependent position of the organ, the constriction by the lips, and other causes combined to promote its continued enlargement, and to prevent the spontaneous cure which commonly takes place when the tongue has swollen in ordinary glossitis.

I was induced to amputate the prolapsing organ, because I found that the operation had been performed in several instances with good result. Moreover, I had witnessed the tedious troublesome process necessary to effect decided improvement in the case treated at Norwich. Mr. Crosse, who came over to Cambridge to see my patient, quite agreed in the propriety of removing a portion of the tongue, and of removing it with the knife. Nevertheless, his case is a remarkable example of the benefit that may result from compression assiduously and perseveringly maintained. It proves that a cure may be thus effected even in a severe and long-standing case: *à fortiori* it quite confirms the observations of Lassus and others, that in the early stages of the disease compression is the proper, indeed the only, justifiable treatment.

It appears that but few instances of the disease have occurred in this country. Sir A. Cooper informed Mr. Crosse that he had treated a case exactly similar to the one under his care successfully by ligature. The patient was a girl, æt. 18. One of Mr. Syme's dressers, who examined the casts and drawings of my patient, told me that he had seen a similar case in the Royal Infirmary at Edinburgh not very long ago. The patient was a girl, æt. about 14; the enlarged tongue hung out of the mouth three inches. Mr. Syme removed the prolapsing part by oblique incisions, meeting at an angle in the centre of the tongue, and united the lateral flaps by sutures. The child died a few days after from inflammation and swelling of the tongue and the parts about the larynx. — Mr. Liston, in his 'Elements of Surgery,' relates a case of congenital enlargement of the tongue, similar in many respects to those I have described,

although the organ seems to have been more vascular, and the source of occasional severe hæmorrhages; the disease was regarded by him as of erectile character. The patient was a male, æt. 18. Mr. Liston interrupted its vascular supply by tying both lingual arteries. On the seventh day inflammatory swelling supervened, followed by sloughing. The protruded part was then isolated by ligature; the system became disordered; abscesses occurred in various parts of the body; and the patient died. These are the only two cases that have come to my knowledge in which the treatment by removal or other ways has been attended with a fatal result.

The affection (under the names of *lingua vituli*, *lingua propendula*, *macro-glossia*,) was described long ago by various authors.¹ The best account of it is by Lassus, whose

¹ Gaspar Peucer, in his commentary 'De Generibus Divinationum,' Witebergæ, 1572, p. 435, speaking of monsters, says: "Vidimus et qui exertas ac ceu dependentes tenuent linguas instar vitulorum recens jugulatorum."

Zacchias, 'Quæstiones Medico-Legales,' lib. vii, tit. 1, quæstio 9, relates that he saw at Rome, in 1628, a male infant, well made, except that the tongue projected three fingers' breadth from the mouth. The child could suck, and lived to the age of 14 months, when it died without obvious cause.

Bartholin, 'Hist. Centur.,' iii. p. 85, mentions a case of "*linguæ putentosa magnitudo*," related to him by his pupil Bogdun. A male child, born with the tongue out of the mouth as large as a filbert. As the child grew, the tongue increased to the size of a calf's heart, but did not prevent his masticating and speaking distinctly.

Sauvages, in his 'Nosologia,' speaks of enlargement of the tongue in new-born infants; also of enlargement arising from inflammation and other causes, but does not distinctly describe this disease.

The following case from Triven 'Observat. Med.,' p. 142, and Sandifort 'Obs. Anat. Path.,' lib. iv, cap. 9, is quoted by Lassus. A girl at Leyden had in her infancy continued fever, followed by swelling and protrusion of the tongue from the mouth. It hung out upon the chin four inches. At the age of 14, to conceal the deformity, she adopted the plan of enclosing the prolapsing organ in a silver box. She could speak and masticate. At the age of 54 she was seen by Sandifort. The tongue then filled the mouth, and hung out of it four inches and a half: its surface

description¹ has been copied by most subsequent writers. He opposes the practice of removing the prolapsing part, and strongly recommends the treatment by pressure, which he believes would prove successful even in the most inveterate cases. He observes, that the malady has never been known to undergo a spontaneous cure; but when the organ is returned into the mouth, and retained there, the swelling gradually subsides. He adopted this treatment with success in the case of a male infant eight days old, where the tongue projected from the mouth about a finger's breadth. Having stimulated the extremity with a little powdered alum, he replaced the organ in the mouth, and retained it there by means of a compress and bandage, which was removed only when the child took food. A radical cure was thus effected in 15 days. In this case the labour had been long and difficult; the face presented and was swollen, the mouth open, and the tongue protruded at the time of birth.—In another case, a lad, æt. 6 years, the tongue was enlarged and protruded three fingers' breadth; the deformity, of three years' duration, was attributed to a bad habit the child had contracted. The application of a few leeches diminished the volume of the tongue, and facilitated its return into the mouth, where it was retained by bandages, and a cure was effected in about a month.—A still more remarkable case related by him is that of a woman, æt. 40, who had for thirty years laboured under this disease. She was treated

uneven, tuberculated, covered with thick saliva. It caused continued heavy pain about the os hyoides. She was subject to frequent attacks of quinsy and difficulty of swallowing; but at other times could swallow easily, and speak with sufficient distinctness to be intelligible.

Galen 'De Diff. Morb.,' lib. i, cap. 9; Valescus, lib. ii, cap. 66; Alex. Benedictus, lib. v, cap. 2, 'De Cur. Morb.,' Scaliger, 'Exercitat.,' 199, cap. i; M. Donatus, 'Hist. Mirab.,' lib. vi, cap. 3; Martin Boydan; Paul de Sorbait; Bardet, 'Bulletin des Sciences Médicales de la Société d'Evreux,' No. 23, p. 67, are all quoted in the 'Dict. des Sciences Médicales,' as mentioning the disease, or as having seen cases.

¹ 'Mémoires de l'Institut National des Sciences—Mathématiques et Physiques,' tome i, 1799. A translation of this Memoir was published in the 'London Medical and Physical Journal,' 1801.

successfully by Louis, who enveloped the tongue in rags sodden with lettuce juice. After six months the tongue was returned into the mouth, and had remained there seven or eight years.

From the cases above mentioned, and those described by other writers,¹ all of which present great similarity in their

¹ In 'Dict. des Sciences Médicales,' vol. xxvii, is an article by Percy and Laurent, giving a full account of this disease, with two cases seen by Percy. The first, a woman, native of Petersbach, whose tongue, large at birth, had increased greatly in consequence of an inflammatory attack when she was three years old, and had retained about the same size from that period to the time when she was seen by Percy, her age then being 18. She declined to submit to the operation which was proposed. The second case, a lad, æt. 16, whose tongue hung 3 inches below the chin, was $2\frac{1}{2}$ inches thick, and filled the mouth. The affection had existed from birth: the teeth were displaced, and the lower jaw deformed. Percy removed the prolapsing portion with the knife, and a cure was quickly effected.

Boyer 'Traité des Maladies Chirurgicales,' tome v, gives a graphic account of the malady, and describes well the attendant changes in the lower jaw and mouth; says the tongue is covered with "mamelons," which may be also developed on the palate (these are doubtless the enlarged papillæ); observes that the affection is usually congenital, or occurring in early life, and that it may be due sometimes to paralysis of the retractor muscles of the tongue, but adduces no evidence or argument in support of the latter opinion. He quotes from the 'Mémoires de la Société de Médecine de Montpellier,' 1816, a case related by M. Mirault, surgeon at Angers. (This case is also related, and figured before and after the cure, in 'Dict. des Sciences Méd.') The patient, a man æt. 34, had suffered under the malady from infancy. M. Mirault removed the prolapsing portion, which weighed $3\frac{1}{2}$ ounces, by means of three ligatures. Failing, after a month's efforts, with the assistance of an expert dentist, to give to the displaced teeth their natural direction, he extracted them, and corrected the deformity and superabundance of the lower lip by removing a V-shaped portion.

M. Maurant 'Journal de Médecine,' vol. xv, gives the particulars of a lad, whose tongue hung from his mouth four fingers' breadth, and was 2 inches thick. He could masticate, and speak, and even sing. The tongue was large at the time of birth. No treatment adopted.

M. de Bierken 'London Medical Journal,' 1815, treated a girl, æt. 12, with tongue so large that it hung over her chin, causing eversion of the lip, &c.; deglutition was difficult; the voice unintelligible, and the

general features, we learn that the disease is one of sufficiently definite character to merit special notice. Though it sometimes originates in an inflammatory affection, it often

larynx projected. The disease had existed from the age of two years. It had been once cured temporarily by compression. Extirpation was resolved on, and effected by ligature, as in Mirault's case: a needle double threaded was passed through the tongue on either side of the middle line, the central and the two lateral portions being thus separately constricted. A cure was effected; and it is added that the teeth, after being extracted, were replaced and properly secured.

Dr. Wells, of Columbia, 'Medical Gazette,' vol. ii, had a patient, a girl, æt. 6, with tongue hanging over chin $2\frac{1}{2}$ inches. The affection had commenced at eighteen months. Latterly, the growth had corresponded only with that of the girl. Prolapsing portion removed by ligatures placed obliquely, so as to give the remaining tongue a somewhat pointed shape. A good deal of irritation and constitutional disturbance followed; but in seven weeks the wound had healed, and the tongue became of natural size.

Dr. Harris, 'American Journal of Medical Sciences,' vol. xv, relates the case of a male, æt. 19. Tongue projecting beyond incisors 3 inches; circumference, 6 inches. Alteration in direction of teeth and jaw as usual. Affection congenital. Enlargement going on gradually. Dr. H. having dissected the tongue a little from floor of mouth, removed the protruding portion by two incisions meeting at an angle behind. The flaps approximated, and united by stitches. Sharp inflammation followed; but the wound healed in fourteen days. Some molar teeth were subsequently drawn to assist in approximating the incisors. In fifteen months the deformity was removed, and articulation distinct. Dr. Harris published a similar case in vol. vii of same journal, except that the disease in that instance commenced at the age of 4 years.

'Med. Chir. Zeitung,' vol. xxxi. Amputation of prolapsing tongue, by Professor Leber, of Vienna. Girl, æt. 6 years; wound healed quickly.—Vol. lxix. Girl, æt. 10, born with long tongue. It protruded $4\frac{1}{2}$ inches. Treated with ligature by Siebold. Case doing well, and wound healed, when the girl fell into a fever and died. A description, taken from post-mortem examination, is given of the alteration of jaw and teeth, corresponding with that in the cases I have related.—Lad, æt. 9; tongue hanging out of mouth 3 inches. Dr. Klein removed the protruding part with bistoury. Alarming hæmorrhage ensued, but was arrested. Next day tongue swollen to former size; the swelling subsided, and an improvement in the shape of the jaw gradually took place.—Vol. lxx. Prolapsing tongue removed by knife, by Rudtorff.—Vol. 105. Tongue

appears to be independent of any such cause. It commences usually in childhood or early infancy, or is congenital. If it be early attended to, it admits of an easy cure by compression. If it be allowed to take its course,

protruded 5 inches; treated successively, by Dr. Edhold, with ligature in the same manner as the case by Bierken.—Vols. 111 and 116. Two, cases in which swelling and prolapse remaining after inflammation were in a short time reduced, and cures effected by pressure.—Vol. 148: Lad, æt. 5, tongue enlarged from birth; protruded $2\frac{1}{4}$ inches. Amputation by Dr. Newman, in Warren county. The wound soon healed, and the attendant deformities were subsequently rectified.

Gräfe und Walther 'Journal der Chirurgie.' A lad, æt. 8, after variety of treatment, the prolapsing portion, measuring nearly 3 inches, removed by the knife, by Dr. Nevermann. The bleeding controlled by actual cautery, and a cure effected.

'Archives Générales de Médecine,' 1844. Case from 'Giornale dei Progressi,' Juin, 1843. Male child, born with hypertrophy of tongue. The prolapsing portion, increasing with years, was removed by Dr. Federici. Two lateral flaps united by sutures. A cure quickly effected.—1838. From 'American Journal,' 1838. Lad, æt. 13, hypertrophy of tongue from birth. The organ had acquired enormous dimensions. Mr. Mussey removed the protruding portion in the same manner, as in preceding case. Cure rapid.—1842. From 'Casper's Wochenschrift,' 1842. Girl, æt. 6; tongue, enlarging three months, projected from mouth, and presented the usual appearances. Treated by Ruhbaum, of Rathenow, with lotions and mild aperients. A cure soon effected.

Louis, in a paper on Diseases of the Tongue, in 'Mém. de l'Académie de Chirurgie,' mentions the case of a man, whose tongue swelled during salivation, protruded from the mouth, and increased in size. The measures adopted having failed to reduce it, amputation was performed by Pimperlé. The wound healed, and the patient was able to speak, as before the occurrence of the disease. This severe treatment is reprobated by Louis, by M. Freteau of Nantes, who subsequently published in 'Recueil general de Médecine,' (see Medical Repository, vol. vii.) the case of a woman, æt. 24, whose tongue had been swollen for about six weeks without obvious cause, resisting treatment by incisions, and other means. Amputation was proposed; but M. Freteau effected a cure in a few days by pressure.

Dr. Clanny, of Bishop-Wearmouth, in 'Edin. Med. and Phys. Journal,' vol. i, gives the case of a lad, æt. 5. Tongue protruded 3 inches, began to swell when a year old. It was treated by pressure in accordance with the principles laid down by Lassus, and a cure soon effected.

the prolapsing organ increases ; at first, in greater proportion than the growth of the child. After a time it would appear to become stationary, or to grow only with the growth of the body, for in none of the cases, even those in which the deformity had existed for many years, had the tongue attained to greater size than one's fist. Even in the most aggravated cases, a cure may be hoped from the persevering employment of pressure ; but where the disease is of long continuance the process is necessarily tedious. Spontaneous cure rarely, if ever, takes place after the prolapse has been established. The operation of removal is not attended with much danger, and the remaining portion of the tongue shows no disposition to enlarge again, so that there is no reason to fear a return of the malady. Neither, on the other hand, do I find that the stump has in any case shrunk below its proper dimensions. Its size, provided a sufficient portion be left, which is ensured by removing so much only as prolapses, is regulated by the cavity of the mouth, and continues sufficient to fulfil the purposes of the organ.

The displacement of the lower incisor teeth and the altered configuration of the jaw, caused by the continual pressure of the heavy prolapsing organ, forms a curious and important feature in the disease, enabling the patient to masticate with the mouth open, and the tongue hanging out. I have seen the same change both in the teeth and jaw produced, in a less degree, by the contraction of a cicatrix after a burn on the front of the neck, dragging the chin down towards the sternum. It is a good illustration of the subserviency and adaptability of the skeleton to the influence and uses of the softer structures. In the cases we are considering, it greatly increases the difficulty of effecting a permanent cure by compression, because the tongue, deprived of its internal support, has a tendency to prolapse again from the mouth during sleep, and at other times ; and the return of the teeth and jaw to their natural position is impeded by the pressure of the large tongue pent up within the confines of the lips, almost as much as when

it hangs out of the mouth. These points were sufficiently exemplified in the case of Sarah Cole. Of course the removal of the prolapsing portion greatly facilitates this part of the cure. I was surprised how quickly after the operation, in Margaret Kelly, the teeth became erect, and the mental portion of the jaw began to be raised under the combined influence of the pressure of the lips, the contraction of the orbicularis, and the circular elastic belt.

In the cases which I have been able to collect, the respective modes of treatment by pressure, ligature, and the knife were adopted, as follows:—

<i>Pressure.</i>	<i>Ligature.</i>	<i>Amputation.</i>
Duration of Disease.		
Lassus . . . 8 days.	Cooper.	Percy.
„ . . . 3 years.	Liston.	Harris (2 cases).
Louis . . . 30 years.	Mirault.	Leber.
Ruhbaum . . . 3 months.	Bierken.	Klein.
Clanny . . . 4 years.	Wells.	Rudtorff.
Freteau . . . 6 weeks.	Siebold.	Newman.
Crosse . . . 6 years.	Edhold.	Nevermann.
		Federici.
		Mussey.
		Pimperl.
		Syme.
		Humphry.

In Bierken's case the disease had been temporarily cured by pressure.

In all the above cases a cure was effected; except in Liston's and Syme's, where the treatment was attended with a fatal result. In Siebold's case, the girl died of fever during her recovery from the effects of the ligature, the slough having been detached, and the wound healed.

EXPLANATION OF THE PLATES.

PLATE I

Shows the hypertrophied and protruded tongue, with its enlarged papillæ.

PLATE II

Shows the curvature in the lower jaw, causing a wide interval between the upper and lower incisors, although the molars are in contact. A slight curve in the opposite direction in the alveoli of the upper jaw, which existed in the case, is rather too forcibly represented in the drawing. The teeth of the lower jaw are more widely separated than natural, and the gums between them swollen.

Hypertrophy & Prolapse of Tongue.

Hypertrophy & Protrusion of Tongue.