Buck (Gurdon)

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CASE

OF

CICATRICIAL CONTRACTIONS AFTER BURNS

INVOLVING THE

CHIN AND NECK,

SUCCESSFULLY TREATED.

By GURDON BUCK, M.D.,
SURGEON TO THE LATE NEW YORK HOSPITAL AND ST. LUKE'S HOSPITAL, ETC. ETC.

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WITH FOUR WOOD-CUTS.

Alex. S., in February, 1869, when two years and one month old, was severely burned from his clothes taking fire while handling lucifer matches. The parts most seriously involved were the chin and front of the neck.

Under surgical treatment, cicatrization was completed in the month of June following, when the patient accompanied his family to their summer residence in the country. In October, 1870, when three years and nine months old, patient came under the author's charge, his condition being as follows: A broad cicatricial band of dense structure extends from the inferior border of the chin in a direct line downward to the upper margin of the sternum and clavicle, approximating the chin and sternum to within about two inches of each other, and obliterating the prominence of the chin and the natural front profile outline of the neck. The band extends on the left side of the chin along the border of the jaw to its angle, but on the right side only to a point below the angle of the mouth. Its anterior surface is furrowed and ridged vertically, and a little below its middle is traversed horizontally by a single knotted ridge. At both lateral edges of the band, the adjacent continuous sound skin, which is very supple, recedes and forms a deep pocket behind the band itself, so that the fingers pressing from opposite sides are easily made to meet, with the skin only intervening. When the band is put upon the stretch by elevating the head, the left half of the under lip is drawn down, and with it the lower jaw is kept separated from the upper, permitting the end of the tongue to be habitually exposed to view, and the saliva to escape constantly from the mouth.

Patient also suffers extremely from a tormenting itching, which often suddenly attacks the cicatricial parts, and provokes him to scratch and pull upon the band in an almost uncontrollable manner.

Fig. 1.

His mother is of the opinion that for several months past the parts have undergone no change. His general health is good.

Fig. 1 shows the patient's condition as just described.

Operation.—With the aid of Prof. A. C. Post, and Drs. C. M. Bell, J. N. Beekman, and Robert Watts, an operation was performed on the 5th November, 1870, as follows: The patient being under the influence of ether, the entire cicatricial band was divided into three serrated triangular flaps, interlocking each other. One of the three flaps was central, with its apex upward at the symphysis menti; the other two were lateral, with their apices downward and resting on the clavicles. They were formed by two diverging incisions carried from the symphysis downward and outward to either edge of the band at the clavicles. From these terminal points an incision was made along either margin of the band, upward and outward, to the edge of the jaw. The three flaps were then dissected up from the subjacent loose connective tissue, from their apices towards their bases.

Special care was taken to continue the dissection along the base of each flap beyond the limit of the cicatricial skin, and to divide every filament of contracted connective tissue that limited the free movement of the skin on the subjacent parts. The head could now be thrown back and made to move freely in every direction. The next step was to reapply the detached flaps to the extensive raw surface from which they had been dissected up, while the head was at the same time kept elevated and maintained in its natural position. The adjustment of the parts to each other was secured by pin sutures inserted at points where the greatest support was required, and also by numerous thread sutures between the pin sutures.

On the right side of the neck it was necessary to excise a thick fold of cicatricial skin rendered redundant in the new adjustment. On the left side of the neck it was found necessary, in order to relieve tension and facilitate the approximation of the edges of the flaps, to make an incision five inches long through the thickness of the skin across the base of the neck from before backward, on a line parallel with the edge of the wound, and two inches distant from it. The edges of this incision gaped widely

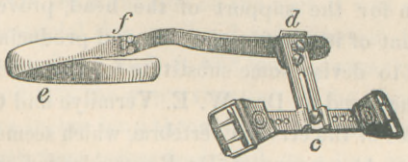
apart, and the desired effect was produced. The raw surface resulting from this side incision was coated with lint saturated with collodion, which, on stiffening, formed an artificial scab. A covering of soft lint was spread over the other parts, and strips of adhesive plaster were applied to secure the whole. Though the operation was necessarily protracted, and the loss of blood considerable, there was no extreme depression of the vital powers in consequence. A good degree of reaction followed, and, aided by an anodyne, the patient passed a pretty comfortable night. At the expiration of forty-eight hours sloughing had destroyed all the flaps, except about one inch in breadth along their bases. The sutures were removed in succession, and the sloughs got rid of as fast as they separated. Special care was taken, in dressing the wound, to hold the detached skin, that had escaped sloughing, in close contact with the subjacent surface by means of long strips of adhesive plaster carried high up on either side of the face and over the temples, and on the sides across the nape of the neck. At the same time, the head was also kept well elevated. The wound took on healthy action after the separation of the sloughs, and the patient's general condition was all that could be desired. The detached skin became adherent, and cicatrization progressed favourably. The exuberant growth of granulations was repressed by the energetic use of solid nitrate of silver, not merely passed over the surface, but plunged deep into the substance of the granulations. This was sometimes repeated daily. Caustic potash was also applied, but at much longer intervals, and only at points where the growth was not sufficiently controlled by the nitrate of silver. At the expiration of about four weeks, when the dimensions of the sore had considerably diminished, a stiff leather stock, protected by a covering of canton flannel, was adapted to the neck and worn constantly, so as to keep the head elevated and oppose the disposition to contraction in the direction of flexion. As cicatrization advanced, the newly formed cicatricial tissue manifested a tendency to develop itself into salient corded bands, which, if left uncontrolled, would have reproduced to a greater or less degree the original deformity. To prevent this effect, the bands were divided at two or more points across their entire thickness, and to a short distance on either side through the neighbouring skin, and deep enough to expose the subjacent loose connective tissue, thus permitting the fresh-cut edges to yawn widely apart. This had the effect of breaking up the continuity of the bands and neutralizing their action. These operations were repeated successively, with the aid of etherization, on the 7th, 12th, and 29th December. The leather stock, worn for the support of the head, proved after a time objectionable on account of its chafing the skin and producing ulceration. While endeavouring to devise some substitute for the stock, my attention was directed to a brace used by Drs. W. E. Vermilye and C. T. Poore, in the treatment of caries of the cervical vertebræ, which seemed admirably adapted to my purpose. At my request, Dr. Poore adapted one

to my patient. On the 21st of January it was applied, and has been worn constantly since, except at night. It consists (see Fig. 2) of two padded steel bands, arranged parallel to each other, one on either side of the spine, and adapted flatwise to the natural curve of the back. It extends lengthwise from the last cervical vertebra to the top of the sacrum.

Fig. 2.

These vertical bands are joined below by a broad padded metallic band, which passes half round the body behind and just above the hips. At their upper ends the two vertical bands are joined by a cross-piece, *c*, Fig. 2*a*, to which a steel ring or collar, *d*, Fig. 2*a*, of an oval shape, is joined by an upright piece, *c d*, so as to stand horizontally and afford a support in front to the chin. A segment of the ring in front, *e*, where it

Fig. 2*a*.



corresponds to the chin, is covered with chamois leather, and forms a shelf for the chin to rest upon. On one side, near its middle, the ring has a hinge joint, *f*, which permits it to be opened in two halves, and thus facilitate its removal and reapplication. By means of a screw at the joint over the nape of the neck, a lever action is made to elevate the ring in front and regulate the height of the chin. Two shoulder-straps, *gg*, Fig. 2, and an apron, *h*, Fig. 2, with three straps at either lateral edge, serve to fasten the brace in close contact with the body.

The brace, besides supporting the chin in an elevated position, and thereby resisting the contraction of the cicatricial formation in a vertical direction, exerts, by means of the straps which pass over the front of the shoulders, a constant outward traction upon the skin covering the lower part of the neck and upper part of the chest, the effect of which is also to resist contraction laterally and keep the cicatricial surface flat and smooth. Another important advantage of the brace is, that it compels the patient, whenever he wishes to move his head in any direction, to elevate it so as to clear the chin-piece, or, in other words, by voluntary muscular action to stretch the cicatricial bands. In addition to the brace, patient has worn constantly, night and day, a cravat of canton flannel two fingers wide, secured around and in close contact with the neck by an elastic strap and buckle, for the purpose of holding the new cicatricial surface in contact with the subjacent parts. From its first application the patient has worn the brace uninterruptedly except at night, and so comfortably as scarcely to restrict his activity or enjoyment. A progressive improvement has taken place in the under lip. It has regained its natural form and functions, and the saliva no longer escapes uncontrolled.

Fig. 3.

Fig. 3, copied from a photograph taken April 22d, shows the final permanent result.

The contour of the chin and front of the neck is restored to its natural form and dimensions, and the head enjoys entire freedom of motion in all directions. The new cicatricial parts present a stellated form, with a centre situated just above the notch of the sternum, from which two prolongations radiate downward, one towards the right, the other towards the left side, extending as low down as the second rib. A third prolongation ascends along the left side of the neck to the angle

of the jaw. From the edges of these principal prolongations there are given off smaller ones in diverging directions, the whole resembling the figure of a fern leaf. The cicatricial surface is smooth and flat, and its tissue is supple and movable on the subjacent parts.

Remarks.—The method of treatment which has resulted so successfully in the present case consists essentially in—

1. The excision of the cicatricial tissue, at least of its indurated and nodulated portion (which in this case was effected by the sloughing process), and the complete detachment of the remainder from the subjacent parts, so as to permit freedom of motion and perfect restoration of the natural position.

2. The maintenance of the parts in their restored natural position by the best adapted mechanical appliances, kept up not only during the healing of the raw surfaces, but for a long time, even for months afterwards, until all tendency to contraction has entirely ceased.

3. The repression during the healing process of the new granulation growth, where it tends to be exuberant, by the energetic application of caustics, such as solid nitrate of silver, and solid stick of potash.

4. The free division of the new cicatricial formation wherever it shows a tendency to develop itself into salient corded bands. Each band should be cut across at two or more points through its entire thickness, and the incision extended on either side of the band into the adjacent skin to a short distance, so as to permit the newly divided edges of the cut to yawn wide apart. These proceedings are in exact conformity to the method laid down and recommended by Dupuytren in his *Leçons Orales*, vol. ii., art. i., p. 66 *et seq.*, Paris, 1832. The late Mr. Henry Earle, of London, at a much earlier period, reported, in vols. v. and vii. of the *Med.-Chir. Transactions*, cases of cicatricial contractions from burns, in which the hand and forearm, and also the neck and jaw, were involved, and which were successfully treated by the same method. Both authors insist on the indispensable necessity of mechanical appliances long continued, to maintain the natural position of the parts and antagonize the persistent tendency to recontraction. Mr. T. H. James, Surgeon to Devon and Exeter Hospital, subsequently to Mr. Earle, reported, in vol. xiii. of the *Med.-Chir. Transactions*, similar cases successfully treated upon the same plan. Mr. James, in a recent pamphlet *On the Results of the Operations for Cicatrices after Burns*, London, 1868, gives his additional experience with brief notes of seven cases that occurred between 1825 and 1846, all of them involving the neck and jaw, and treated successfully. Of the result of most of these cases Mr. James was able to inform himself for years after the treatment, and ascertained the permanence and completeness of the cure. The mechanical support which he employed consisted of an upper arch adapted to the base of the jaw, and of a lower arch adapted either to the sternum and clavicles, or to the upper

part of the thorax, as the state of the integuments might require. From the centre of the lower arch was raised a steel frame perforated with a screw, which acted on the upper arch beneath the chin. The two arches were united behind by uprights springing from the lower arch, and furnished with hinges where they joined, so that by working the screw the distance between the two arches might be further increased. Such is Mr. James's description of his supporter, a figure of which is given in his pamphlet, and also in vol. xiii. of *Med.-Chir. Transactions.* The brace used in the treatment of this case, possesses, in the opinion of the author, decided advantages over Mr. James's supporter. It leaves the sore surface free of contact with the brace, allows greater freedom of motion to the head and neck, and can be worn with more comfort by the patient. The author was encouraged to undertake the present case by the complete success of his friend Prof. A. C. Post, in the treatment of a child with cicatricial contractions from a burn, binding the dorsum of the hand in a position of extreme extension and in close approximation to the forearm.

So perfect was the restoration of the parts to their natural position and functions, that the child has since acquired a good degree of proficiency in playing the melodeon.

The author's acknowledgments are also due to Dr. Post for his valuable co-operation in the treatment of the present case, in which he was associated with him in consultation.

Supplementary Report.—The patient continued to wear the brace daily till he left the city to spend the summer in the country. During the whole month of August the brace was left off entirely, and without any apparent detriment. It was thought, however, a safe precaution to resume its use again, and have it worn two days in the week only, from rising in the morning till dinner-time.

November 15, 1871. The patient was examined to-day, and the favourable condition of the chin and neck already noticed was found to be fully maintained, as well in regard to the freedom of motion of the head and neck as to the appearance of the parts.

No. 46 West 29th St., November, 1871.