Fracture of a Spinous Process

This is due to direct violence. It may occur as a complication of fracture of a body or a neural arch. Diagnosis depends on the recognition of signs of local trauma, irregularity in the line of the spinous processes, and crepitus, without cord or nerve symptoms. Treatment is by immobilization, when sound, fibrous union is to be looked for. Occasionally it may be necessary to remove the loose fragment.

Fractures of Laminae

These may occur with or without depression of the neural arch. They are due to direct violence. The diagnosis depends on signs of local trauma, crepitus, rigidity, and x-ray appearances. In some cases there may be evidence of pressure on the cord. Treatment should be by open operation, especially in the presence of pressure on the cord, which may be due either to blood or to depressed bone. The prognosis after operation is almost universally good.

Fracture of Transverse Process

The common type of fracture of transverse processes belongs to the category of sprains of the back rather than that of spinal fractures. The injury appears to be due to a spasmodic muscular contraction. It is unilateral and multiple, and always occurs in the lumbar region. A fracture of a single transverse process may occur in any region of the spine, and may be due to direct violence. This accident is rare in the lumbar region owing to the depth at which the process lies. Injuries causing fractures of transverse processes in the lumbar region are a fruitful source of litigation under workmen's compensation and following motor accidents. To judge by one's experience in court, the fracture appears to give rise to severe pain, made worse by hyperextension of the hip on the same side or by bending the back towards the opposite side. There is also some rigidity and tenderness on the affected side.

Eight fractures, all in the lumbar region, were found among our thirty-four spinal fractures. This would seem to be an unduly large proportion, but all the cases showed the typical distribution of the fractures—that is, they were multiple and unilateral. They were all treated by immobilization in bed for two or three weeks, followed by massage and exercises. Five cases were reported as having given perfect results, allowing the patients so treated to return to and continue at full work. The duration of incapacity is not noted. These results make the prognosis appear unduly optimistic.

Results of Treatment of Cases under Review

Death occurred in two cases of fracture in the upper cervical region on the day of admission, in one case of fracture-dislocation of the twelfth dorsal vertebra in a few hours, and in one case of fracture of the eleventh dorsal vertebra on the ninth day. In a fifth case—compression fracture of first lumbar vertebra—the patient, after complete recovery, died of cancer of the stomach two and a half years later.

One patient is paralysed three years after a fracture-dislocation of the first lumbar vertebra; five suffer from root pains—only one very severe; nine suffer from some pain, rigidity, and weakness of back generally; and eighteen are either doing, or fit for, full work.

All cases of fracture of a body were treated by the method advocated by Watson Jones. In no case was laminectomy performed.

HARE-LIP*

BY

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In the time limit of twenty minutes allowed for this paper it is obviously impossible to discourse on the paediatric management of the operative, pre-operative, and post-operative treatment of the various types of hare-lip. I shall therefore confine my remarks to the most severe common type—namely, the complete single cleft of the lip with accompanying cleft of the alveolus and palate. Even in this type there are so many variations offering different operative problems that one is forced to the conclusion that no two hare-lips are exactly similar. In general, however, the problem is not so much the union of the lip as the creation of a satisfactory nostril.

Age at Operation

Operation on the lip should be completed before the infant is 4 months old. If this can be satisfactorily accomplished the pressure exercised by the musculature of the re-formed lip will push back the most prominent cleft alveolus within twelve months as a rule. I used to operate during the first few days of life, but of late years I rarely operate under two months unless the baby is growing vigorously. If the nutrition problem is under control and the infant gaining at least four ounces a week, the age of election for operating is from 6 weeks to 3 months. If operation is not possible for various reasons before the child is 6 months old there is grave risk that the projecting alveolus will overlap the opposite maxilla permanently.

Feeding of the Infant with Hare-lip

Special endeavour should be made to maintain the breast milk supply by stimulation and expression, carried out by nurses skilled in these manipulations. Failing the breast milk, cow's milk mixtures prepared according to the caloric needs of the infant are adequate in most cases. Some very difficult and slow feeders are better catered for by the use of lactic acid milk, with or without added carbohydrate, because the greater concentration enables smaller feeds to be taken.

An infant with the type of lip under discussion is often quite unable to suck the breast at all. The rubber vulum designed by Wearne of Sydney not only facilitates sucking from the breast or feeding bottle but materially shortens the feeding time. I do not advise its use for more than a few weeks, as I consider it interferes with the natural tendency to closure both of the lip and of the palate. Other means of feeding these babies varies with the individual infant; some take well from a bottle fitted with a long teat and rather large opening, others do better with a Breck feeder, some like the spoon or pipette feeding best, while many take their feeds well from a funnel and small catheter, given slowly. As pipette, spoon, and catheter methods are preferred after operation these are usually practised at any rate for a few days prior to operation. The pipette, unless well rounded, should be tipped with rubber.

Pre-operative Management

No operation is attempted if the baby has had recent contact with any infectious disease, shows any sores or running nose or ears, or has any cough or tendency to

* Read in opening a discussion in the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Melbourne, 1935.

diarrhoea. If teeth are erupting in the cleft they should be removed prior to operation. All such conditions interfere, often seriously, with the healing processes, or aggravate the risk of bronchopneumonia or enteritis, two of the commonest causes of mortality in my series of 217 cases in the last nine years. In some cases of hare-lip and in all cases of cleft palate a swab is taken of the nose or throat, or both, before operation, to exclude, if possible, the presence of the Klebs-Loeffler bacillus.

It is advisable to have the baby in hospital two or three days prior to operation, so that it may accommodate itself to its new surroundings, and also to enable the nurses to become cognizant of its habits and diet. A special nurse is a valuable asset in these cases. The pre-operative period in hospital will enable the infant to become accustomed to having its elbows stiffened and, in some instances, its legs controlled to prevent it from rubbing its lip.

The Porgett splint can be applied. This is a contrivance consisting of a head-wing prolonged forwards two and a half to three inches and attached posteriorly to a vertical stem connected below to a straight piece to which the arms are bandaged. In this apparatus the baby can be placed face downwards for short periods at a time to enable exudations to escape from the nose and mouth without endangering the lip.

A routine x-ray examination is not done, but in any case showing dyspnoea or cyanosis not attributable to falling back of the tongue or cardiac malformation, an x-ray investigation for enlargement of the thymus has been carried out, always with negative results. I have frequently used ultra-violet radiation in the winter, both before and after operation, with a view to improving nutrition and promoting healing, but I am not optimistic as to its value generally, and in some cases have regarded its use as distinctly detrimental. No food is given for at least four hours before operation.

As regards preparation of the parts for operation, careful cleansing of the lip and nostrils is carried out, using mostly soap and water, saline solution, and gauze, avoiding traumatism and antiseptics, other than boric lotion occasionally. On the table the nostrils, skin, and mucous membrane are dabbed gently with spirits. The temperature of the operating theatre is approximately 65° to 70° in winter. The baby lies flat on the table on a well-protected hot-water bag, and a rolled-up half sheet is placed under the nape of the neck to project the chin forwards.

The anaesthetic is ether only, given by the drop method until the anaesthetic stage is reached, after which the ether is given intrapharyngeally through a No. 8 soft rubber catheter introduced into the nostril on the normal side.

Operation

Most writers seem agreed that no perfect result of a hare-lip has yet been attained by operation. No standardized type of operation is carried out in all cases. If, for instance, the cleft is not a gaping one, the nostril is not stretched, and there is ample lip tissue available, the simple curved incisions advocated by Berry and Legg often give excellent results, provided that the nostril is well freed from the bone and that the musculature of the lip on each side is accurately sutured. If the cleft is wide and the ala nasi stretched, I am not in favour of any operation modelled on the Rose type, of which that of Berry and Legg is a modification. Such an operation involves the loss of tissue, and invariably produces a very tight flat lip and an indifferent nostril.

My inclinations are for some form of flap operation, originally sponsored by Mirault, and it is a matter for

decision at the time whether the flap should be taken from the lateral margin or the medial one. Trial approximation of the lip margins with the fingers will generally indicate which method is most likely to give the best result.

Of the single flap method I personally prefer the medial flap to the lateral one, if the thickness and the depth of the red border is sufficiently good to ensure that fullness in the mid-line so essential to a satisfactory lip margin. Another reason for preferring the medial flap is that I believe it pulls the columella into a more median and vertical position, and indirectly tends to straighten the nose. If it appears that a better lip can be produced by the utilization of a flap from the lateral side, then I prefer to do Blair and Brown's modification of the Mirault operation. It is not my intention to discuss the technicalities of their method, which is certainly complex, and is more liable to lead to failure if the incisions are not absolutely accurate. My own experience of their operation has convinced me that a lip and nostril as near perfection as possible can be obtained in carefully selected cases.

MEDIAL FLAP TECHNIQUE

I shall now briefly outline the operation I generally perform, using the medial flap. A silkworm-gut suture is inserted into the tongue to act when needed as a tractor and gag combined. The first step is to estimate the probable length of lip required by employing compasses to measure and to mark the distances from the imaginary floor of the nostril close to the columella on the defective side to the imaginary lower level of the lip vertically below this point. This measurement is then transferred from the lateral and medial borders of the defective nostril to the muco-cutaneous line on either side of the cleft in a manner somewhat similar to that adopted in Thompson's operation. These points are marked by pricking the skin edge with the compass or by using methylene-blue on half a Dawson's pen nib. They are of use later on when the parts are distorted by the extensive freeing of the alae and lip margins to refresh one's memory as to the original disposition of the parts.

The process of freeing the lateral lip margin and the ala should now be carried out. The gingivo-labial sulcus is widely divided, in some cases almost as far out as the orifice of Stenson's duct, and into the nostril, cutting the lateral cartilage from its attachment to the maxilla even as high up as the nasal bone. A piece of gauze on a periosteal raspator acts as a satisfactory means of freeing the cheek from the bone, if necessary, up to the infra-orbital foramen.

As the ala is lower on the cleft side and the columella deflected at its base towards the sound side, the nose as a whole appears to be twisted away from the cleft. These deformities necessitate more or less separation of the columella and ala on the uncleft side, if reposition is to be effective. Before doing this, cut the mucous membrane from the projecting alveolus, leaving enough attached about the region of the fraenum to enable the mucous membrane from the opposite side to be adequately sutured to it. The medial lip margin is then separated from the bone, also the columella and the normal nostril, being careful to avoid cutting into the nostril during the process.

The projecting alveolus is at this stage well exposed, and in wide clefts where the bone projects very much, firm pressure with the thumb will often appreciably reduce it. It is not necessary to fracture it, as over-reduction is likely to ensue, with subsequent flattening and retraction of the upper lip.

The parts are now prepared for the plastic on the lip. The compass points are identified. On the lateral lip margin, encroaching more on the skin than on the red margin, an incision is made from the lower compass point upwards, extending into the nostril just beyond the upper compass point. This incision in its lower half only cuts into the lip tissue three-quarters of its thickness, so that the deep mucous membrane is intact. In its upper part, where the lip is very thin, the deeper mucous membrane is incised as well and the thin filamentous strip removed. The lower part is now hinged backwards by continuing the incision from the lower compass point vertically downwards through the red margin. This backwardly hinged flap is often broader than is necessary, and it may be advisable later to remove a strip of it to prevent redundancy. Bleeding is stopped by mosquito forceps, but no ligatures are ever used.

The medial flap through the whole thickness of the lip is now to be formed. The tenotome is inserted at a point which varies according to circumstances, but is approximately one-third of the distance up the lip, between the lower compass mark and the floor of the nostril, or about one-sixth of an inch from the muco-cutaneous line. The knife is sometimes obliquely directed in such a way as to obtain enough of the underlying lip tissue to give fullness to the flap, and the incision is directed upwards and medially towards the compass point just inside the nostril where the skin covering the columella and the mucosa meet. The flap is opened out, the labial vessels secured, and a horsehair suture inserted into its free end to act as a tractor.

The first suture is of strong horsehair, and is inserted into the skin on the lateral side level with the tip of the ala, passes across the cleft, and re-enters on the opposite margin, to emerge inside the nostril just above the compass point. As this suture forms the nostril it may need several different insertions before a satisfactory result is attained, and should be left untied at this stage. To reinforce this a deep suture of No. 0 plain, sometimes chromic, catgut is used; this passes from the deep aspect of the cleft in its upper part laterally under the apex of the ala and back again towards the mid-line, then across the cleft into the tissues under the columella, and back again to the mid-line. Having drawn this together with a friction knot, it should, if well placed, reinforce the first suture, in re-forming the nostril. In doing this try and roll the ala inwards, so as to avoid the persistent tendency which it has to evert, and remove any excess of tissue in the floor of the nose likely to occlude the airway. Leave the suture untied.

The next suture is of horsehair, and is placed at the muco-cutaneous margin. The attenuated end of the

medial flap is cut off at a point which will preserve the continuity of the muco-cutaneous line when approximated to that of the opposite side. A horsehair suture is inserted, often under a magnifying glass to ensure correct placement, and is left untied. It is now possible to put in two or three more deep No. 0 plain catgut sutures, embracing the mucous membrane and muscle on the lateral margin, and the muscle and thin strip of mucous membrane on the alveolar process medially. These deep sutures are tied as they are inserted, after permanently tying the deep nostril catgut, and when all are tied the skin edges should lie accurately apposed. The nostril horsehair is then tied and the muco-cutaneous line one also, and, between these, two or three very fine horsehair or gossamer silk-worm-gut sutures, preferably atraumatic, are inserted

to complete the apposition.

It is now necessary to bring down from behind the lower margin of the hinged flap. This should be sutured to the back of the medial flap in such a way as to give fullness to its red margin where this appears to be attenuated. One or two sutures of fine horsehair will complete the union of the red margin in front.

Finally, in some cases the ala is supported by a silk-worm-gut suture passing from the naso-labial sulcus on the cleft side under the floor of the newly formed nostril into the opposite nostril and back again in close proximity to its point of

insertion. This is tied over a piece of gauze at the tension considered requisite. Before tying this a rubber tube of appropriate size may be placed in the nostril to counteract the tendency which the upper margin has to droop, and is rarely retained for longer than twenty-four hours. Clean the suture line carefully with saline, removing all blood from the sutures, and dry with gauze. Dab with spirits. No other dressing or application is used. I have long ceased to use the Logan traction bow in cases of single hare-lip.

Post-operative Care

The baby should be returned to its warmed bed and over-heating avoided. Normal saline solution and glucose, with or without brandy, is given per rectum four-hourly. Sterile water is administered by the mouth until the infant is able to take milk feedings, which are fully resumed within twenty-four hours. No sucking from the breast is allowed until after the fifth day.

Constant attention to the lip is imperative to prevent scabs and crusts forming, using gauze dipped in alkaline solution, saline, or boric lotion, finally dabbing with spirits one part and boric lotion three parts, which dries very soon. The nostril should be cleansed also, but any manipulation tending to loosen the stitches in the floor should be avoided, as disfiguring dilatation of the nostril ensues.

All stitches should be out by the eighth day, except the posterior and deep ones, which are generally spat out or swallowed later. The Porgett splint is used to help the discharge of exudate from the nose and mouth. Any erosion in the nostril is checked with 10 per cent. argyrol solution, two drops two or three times daily, followed by sterile paraffin (a drop or two). Sedatives are not used as a routine, but if there is much crying a minim or two of tinct. opii, repeated as required, is effective. The infant is discharged on the ninth day, but is reviewed again in four days. The palate is repaired at 2 years. Subsequent repairs to the lip are carried out after 4 or 5 years of age.

TREATMENT OF ASTHMA BY ULTRA-VIOLET LIGHT

BY

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By way of experiment I began in 1930 to treat asthmatic patients with ultra-violet irradiation. Encouraged by the results, I proceeded to develop a technique, record observations, and invent explanations.

The lamp used was a Hanovia "Alpine Sun" (1930 model), 220 volts A.C. The irradiations were given to the whole body, back and front, at a distance of forty inches from the burner. Exposures were given twice or thrice a week. The optimum dosage was found to be that which produced a uniform erythema lasting twelve to twenty-four hours. The actual length of time for the first exposure varied with individuals from four minutes to eleven minutes. Each successive exposure was about one and a half times as long as the previous one. As the skin became pigmented, erythema production came to take an unconscionable time, so treatments would be stopped at this point for a few weeks until the pigment had faded and the skin resumed its erythematous response.

Case I

A farmer, aged 50, developed severe asthma after ill-managed peptone injections in 1921 aimed at relieving very mild hay fever. By 1930 attacks came on every few weeks; he was "never clear," and could not go outdoors after dusk. In February, 1930, adrenaline, pituitrin, asthmolysin, and morphine were used nightly in increasing doses. As a last resource he had a short exposure to the lamp, which produced deep erythema; he rang up later in the day to say that his "chest was clear," and he slept naturally that night.

After two doses he had no trace of asthma for fourteen months and resumed all his activities. He had never been free for so long a period. However, at signs of recurrence I gave him three exposures. During the third exposure he received (what was for him) an overdose. That night he was in high delirium; temperature was 101° F.; chest and back were painfully erythematous; his eyelids (protected by goggles during exposure) were almost closed with oedema. Joints were swollen and painful. All these symptoms, suggestive of "serum sickness," subsided by the next morning, except the joint pains, which were gone in another twenty-four hours. He was clear from asthma for two years after this.

In September, 1933, he complained of "feeling desperately ill." For a fortnight he had felt progressively more tired and weak every day, until now he could barely stand. In addition he had vague abdominal discomfort and anorexia. Temperature was normal, pulse 100, blood pressure 75/60, heart sounds feeble. His grip was weak, and he looked "shrunk in on himself." There was no Addisonian pigmentation, and Loewi's test was equivocal. "Acute suprarenal dysfunction" was diagnosed. Suprarenal extract (Parke, Davis and Co., 90 grains a day) was given, and his blood pressure rose steadily to 120/80 in seventeen days, at

which point his asthma recurred. Mild erythema-producing doses of ultra-violet light were applied for the remainder of the year. In May, 1934, his blood pressure was 128/90 on 40 grains of suprarenal extract a day; weight increased by 7 lb. Occasional tightness of the chest was kept in check by ephedrine, ephazone, and occasional injections of adrenaline.

In January, 1935, asthma set in furiously, and after ten consecutive disturbed nights (for both of us) the patient agreed to undergo more light therapy. Once again the first exposure gave him a natural night's rest, and three more doses were given with a view to producing pigmentation. He has been clear ever since, and once again can take articles of diet which during asthmatic periods invariably brought on a spasmodic attack.

COMMENT

This case presents several features for discussion. A sufferer from importunate asthma gains long spells of freedom after ultra-violet rays. Is the skin an endocrine organ which liberates a substance to restore the endocrine imbalance expressed by asthmatic attacks, either by inhibiting the over-stimulation of the vagus nerve or by stimulating the sympathetic nervous system?—and not only supplying this substance during stimulation but continuing to do so, giving immunity from attacks for several months, even when particular allergens are exhibited? The nature of this substance and its possible relation to erythema production and pigmentation will be discussed later.

Case II

A farmer, aged 28, had had attacks since the age of 6, following whooping-cough, and by now was reconciled to spending most winter days over the fire and many nights propped up with four pillows, with injections of adrenaline when he could not hold out any longer.

Three exposures to ultra-violet light in March, 1931, rendered him free from attacks for seven months. During that summer, at my suggestion, he worked in the fields in zephyr and shorts, and retained his pigmentation. Although light-haired he tanned well. During this period he could take liberties with his diet. By November wheeziness and tightness of the chest returned; so he was given a course of exposures until the end of December. The first dose aborted the chest symptoms, and he was free for six months. In May, 1932, four doses were given, and he was free for a year. In May, 1933, three doses were again given and he was free until October 31st, 1933. Then came the most severe attack he had ever had. Adrenaline, pituitrin, atropine, barbiturates, and, finally, morphine were given.

On November 2nd, 1933, at 5 a.m., he had morphine grain 1/4 and atropine grain 1/100 with no effect, and the dose was repeated at 10 a.m., again with no effect. The patient wrote instructions for a car to be hired—he was past speech—and arrived at my house at 2.30 p.m. He was carried gasping, cyanosed, and with protruding eyeballs into my consulting room, where he gesticulated towards the lamp. After eight minutes—I was sitting screened from the light—I noticed that his breathing was quieter, and he made no reply to my comment. On inspection he presented an alarming appearance, so I switched off the lamp and tried ineffectually to rouse him. He was in deep coma. This state lasted ten minutes, when quite suddenly he cleared his throat and was wide awake, surprised to find the lamp extinguished and myself and his mother standing by him. It was a complete "black-out" (to use his expression) for him for more than ten minutes. His breathing and pulse became normal and his pressure was 120/70. After he had vomited he dressed himself, chatting the while, and walked to the car. Since then he has kept at full work on his farm, controlling occasional chest symptoms with single doses of ephazone. Last summer he kept himself well tanned by sun-bathing. A striking feature of this case is the freedom from attacks while his skin is pigmented and the impotence of his allergens during this time.

COMMENT

What mechanism produced the "black-out"? One of the narcotic drugs taken within the preceding twenty-four