

PLASTER BANDAGE IN GUNSHOT FRACTURES.

By S. BRERETON,

Surgeon, Wing of 5th Regt., N. I.; formerly Aide-Medecin in the French Army.

The absolute immobility of bones fractured by gunshot being the indispensable condition for their recovery, this object has been attempted by various apparatus known as immovable, amovo-immovable, &c., composed of bandages impregnated with substances capable of solidifying. All these substances except plaster require a considerable time to solidify, and are therefore unsuitable when time is an object.

As to the value of the plaster bandage for the treatment of fractures by gunshot, there is some difference of opinion; but surgeons, especially the Germans, who have most experience of it, are unanimous, as a rule, with regard to its worth, and consider it, the apparatus, *par excellence* for their treatment. Neudorfer, in his "Handbuch der Kriegschirurgie," says that the plaster bandage is applicable in every gunshot and in other compound fractures, in wounds of the articulations, in certain wounds of the soft parts, and parenchymatous organs, and in the consecutive treatment of many curative operations. In all these cases its place cannot be supplied by any other apparatus; and, if applied properly, and at the right time, it prevents the development of the phenomena of local reaction, and sometimes that of the constitutional symptoms, which in every other case are the necessary consequences of gunshot fractures.

Lehnerdt, "on the application and success of the plaster bandage in Schleswig-Holstein War" (Revue des travaux de la société med. allemande de Paris, 1866,) though he says that the great expectations from it were not fully realised, gives it as the result of his experience that the most brilliant results were those obtained in fracture of the leg; and cites a case of fracture by a shell of both bones of the leg, with extensive comminution and laceration of the soft parts, when consolidation took place without the bandage being removed. With regard to the war of 1870-71, where this bandage was not much used in the first lines of relief, as there was no necessity, the ambulances were so near, but in the subsequent removal of the wounded great use was made of it, and experience has shown that even in severe gunshot fractures treated by this method, the wounded could undergo long journeys without injury; and so great an advantage, Lehnerdt considers, ought to make military surgeons accept the bandage for the future. So impressed are the Prussian authorities with its importance that the system is general in the German Army, and by Regulation of the 29th April 1869 of their Army Medical Department, 500 kilos. of plaster are carried by each corps d'armée, with bandages and thin splints for strengthening the apparatus, to be described hereafter.

Although Larrey has specially recommended immovable apparatus for every period of the treatment of gunshot fractures, yet the plaster bandage has not found favor with French military surgeons. This may arise, as Legonest says, from not being accustomed to it; he considers that it is not applicable for the first dressing, and for the subsequent, that it has dangers with great advantages.

The advantages of this method are: 1st, absolute immobility of the fragments, making the recovery both quicker and easier, and allowing the wounded to be transported without injury even under unfavorable circumstances; 2nd, facility of carriage of the necessary materials; 3rd, simplicity in application; 4th, cheapness.

The objections that have been made against it are: 1st, That it requires a longer time for its application than other apparatus. But its advantages fully compensate for the additional time; besides the time is not much longer in surgeons' hands accustomed to its application. 2nd, It shuts out the limb from view. This is obviated by some of the ways of applying it, for instance, Bar-

deleben's, and the bandage can always be slit up, on any suspicion arising as to the condition of the limb. 3rd, In consequence of the swelling produced by the inflammatory action they press on the limb and produce pain. There is no doubt that part of this swelling is due to irritation from the movement of the fragments which the bandage will prevent; also by its affording equable pressure on the whole limb. 4th, When fenestrated is said to produce a kind of hernia of the wound. This must be rare, as in a considerable number I have seen treated by the apparatus, I have never observed it.

Taking into consideration the advantages and disadvantages, the advantages appear to preponderate very much, and from the opinion of those best acquainted with it, and from what I have seen of it myself, it seems to be one of the best apparatus for gunshot fractures, especially where men have to be carried a long way from the place they fall to the hospital, or afterwards have to be moved, the immunity and comfort of the wounded are incontestable.

Some excellent English surgeons, for instance, Erichsen, employ the immovable bandage from the first in the treatment of fractures, and should the plaster applied at the first dressing be found to give pain, the apparatus can be slit up, when it will act as a gutter splint, retaining exactly the shape of limb, and if the wounded require to be transported again, it can be retained in its place by a few turns of a plaster bandage.

With regard to the mode of application, a few of the favorite methods with the German surgeons are as follows:—

1st.—*The circular bandage with internal lining.*—The fracture being reduced, and kept in position, the wound is covered with wadding or charpie. The entire limb from the inferior to the superior articulation is covered with flannel, or any other cloth damped. Over this is applied, in the usual way, a bandage impregnated with plaster of Paris and damped. Neudorfer recommends the clothes of the wounded to be cut in strips, and put under the bandage, wadding not being suitable, as it is difficult to keep in its place, and liable to imbibe the secretions of the wound.

If the bandage is applied directly on the skin, which Neudorfer considers the best way, the limb should be shaved and oiled. The plaster for this purpose should be of a good quality, and must not be old, or injured by moisture; when taken from the barrels it should be kept in air-tight tin boxes. Any ordinary material will do for bandage. The plaster can be applied by first rubbing it into the bandage, and then wetting it or by making a paste with water, and immersing the bandages into it; for this latter way Scultetus bandage is best adapted.

2nd.—*The strengthened bandage to give solidity and strength, without too many layers of bandage.*—Several substances are placed between the layers. Card board is not suitable, as it retains moisture and prevents the plaster drying; it is also difficult to procure, and to cut; and wire is also unsuitable, being difficult to apply, and produces injurious pressure. Fine metallic netting would answer the purpose, but is too dear. The best material is thin pieces of wood; it is strong, cheap, easily procured, and applied and carried, and adapts itself to the shape of the limb; thin veneering wood is the best, called by the Germans Schusterspahn and Tapezierspahn. The apparatus can also be strengthened by applying a layer of plaster when on.

3rd.—*Fenestrated bandage.*—For the transport of the wounded this is not necessary, but for the subsequent treatment is absolutely so. The aperture can be made during the application of the bandage by leaving the wound uncovered, but this is too tedious; it is better to mark the place of the wound by a compress under the bandage, or by a mark on it, or on the sound limb, and when the bandage is on, the aperture can be made. The plaster can be rendered soft at any time by dilute hydrochloric acid. Roser puts the head of a clout head nail on the wound and lets the point through the bandage, which thus

gives a hold to cut out the piece. Szymanowsky recommends a very good way. A ring of strong twine, the size of the proposed aperture, is made, which is placed round the wound. The bandage is passed through the ring, and turned back on itself, and round the limb till it meets the ring on the other sides when the same thing is done, and so on till the aperture is complete. Of course in case of simple fractures by gunshot no aperture is necessary, which, according to A. Demme, "Militar-chirurgische Studien," are about 5 per cent.

4th.—*Voelker's way*.—All the materials are in a tin box soldered up, and instructions for use, which are as follows:—On each wound a dressing is put, covered with varnished paper, and over this a compress to show the position of the wound. The limb is now covered with wadding, from the toes and the pelvis in case of fracture of the femur, and held on by a bandage. Over this is placed four narrow thin splints, which are kept in position above and below by two assistants; the six bandages in the box are put one after the other for a minute in water; the first is applied in a spiral way to keep the splints in their place, and the others are put on in the usual manner. The ends of the splints are then dressed off with a scissor.

5th.—*Bardleben's (Professor Charite Hospital, Berlin)*—is done by putting on each of the articulations above and below the fracture a capsule of plaster bandage, leaving the whole of the limb exposed. Over them are placed pads of wadding, impregnated with plaster; the capsules are then connected by narrow splints which are retained in their place by bandages over the capsules. The wadding keeps the splints from contact with the limb, thus facilitating the application of cold lotions and dressings.

For the application of the plaster bandage to fractures of the femur particular apparatus are necessary for raising the patient, called *bekunstatzen*, to allow the bandage to be passed round the pelvis, without which a great number of assistants are necessary, and it is very difficult to keep the patient steady. Those of Roser's and Voelker's are the simplest and best, and consist of a seat, like a saddle with a highommel, which fits to the perineum and acts as a point of counter-extension, while the shoulders are supported by a kind of pillow. The whole can be fixed to a table. The bivalve bandage, which is now used in some of the London hospitals, is thus put up. Two pieces of flannel, the length and circumference of the limb, are cut so as to overlap a little in front. They are then laid one over the other, and stitched down the middle line with two rows of sewing $\frac{1}{2}$ -inch apart. The inner one is fastened over the limb with pins, and plaster applied on its outer surface, which should be of rather thick consistence; the outer layer is then brought over the plaster and all smoothed with the hand when dry, and the pins removed, it will open along the line of stitching like a hinge, and can be kept in its place by straps, &c.

ON HERPES.

By A. GARDEN, M.D., *Civil Surgeon, Saharanpore.*

(Concluded from page 286.)

Herpes labialis seu facialis. Hydroa febrilis.—This form of herpes is met with on the face, and as it is not confined to the lips, Hebra considers that *H. facialis* is the more appropriate term, though not the most commonly used, as it includes all the varieties met with in that position, *H. nasalis*, *palpebralis*, *auricularis*, and *labialis*. It is, however, hardly comprehensive enough, as the disease is frequently met with on the tongue (*H. linguæ*) and on the mucous membrane of the pharynx, fauces, hard and soft palate, cheeks and gums, and even on the neck and trunk, and on the penis as *herpes progenialis*. Symptomatic herpes appears to me the best term, for though all authors admit the existence of idiopathic cases, occurring in otherwise healthy persons, my own belief is that

such cases are exceedingly few and far between, and that in most or all of them some gastric or hepatic disorder will be found to have preceded the eruption, especially where the herpes affects the tongue and mouth. *Hydroa febrilis* is too restricted, as fever is not necessarily the precursor of the eruption, and *herpes phlyctænodes* has been used in a too widely differing a sense by authors to be applied satisfactorily to this form; thus Wilson (Ed. 1868) uses it for all forms of zoster not forming a demizone, whilst Fox (Ed. 1869) and others use it to designate a group which includes *H. facialis* and *progenialis* and zoster. The difference between zoster and this form, as pointed out by Hebra, is, however, very marked; for in herpes *facialis* or *symptomatic herpes*, the eruption is more often central or irregularly bilateral than unilateral, is most often recurrent, is not preceded, accompanied, or succeeded by neuralgia, whilst the groups of vesicles are single, or but few in number, and are usually developed in the train of febrile (*hydroa febrilis*) or other complaints. On these grounds he does not consider that Baresprung is justified in classifying herpes *facialis* and *progenialis* as limited forms of zoster of the trigeminal and sacro-genital nerves. Hebra, however, considers those patches of herpes that occur on the trunk and limbs, and which are often known as *H. phlyctænodes*, as limited zoster, but they seem in no way to vary from ordinary symptomatic herpes. In this form of herpes the hyperæmic patches are smaller than in zoster, the vesicles fewer and smaller, and the duration of each group shorter (4 or 5 days). Occasionally vesicles are not developed, and we have then a herpes sine vesiculis. In the mouth the vesicular stage is with difficulty recognised as it is of short duration, and the vesicles soon cease to exist as such, owing to the moisture of the parts, nothing being left visible but small whitish sodden excoriations on hyperæmic bases.

The first symptom is smarting and burning of the part, but this may be very slight; neuralgia there never is. The tendency of *H. facialis* is to recur at regular or irregular intervals. It is occasionally met with in children and others annually at certain seasons, or as in the case recorded in the *Journal of Cutaneous Medicine* (vol. 3, p. 200), it may return every four to six weeks, after once having originated in acute febrile catarrh.

Herpes *facialis* may be either idiopathic or symptomatic, but the latter is by far the most common, if indeed idiopathic herpes, *i.e.*, herpes independent of any disorder of the system, does occur, which, I think, is unlikely. Herpes of the mouth or tongue I have frequently suffered from, but it has invariably been connected with derangement of the hepatic functions; in fact, that or gastric disorder I believe to be at the bottom of most of the idiopathic "so called" cases.

There is hardly a febrile complaint in the course of which herpes *symptomatica* may not occur. In Europe it is most frequently met with in connection with acute febrile catarrh, of which, according to Tilbury Fox, it forms an integral portion, and is then situated principally on the lips and nose. It also occurs in pneumonia, intermittent and remittent fever, in typhoid fever, in typhus fever according to Hebra (Baresprung denies this), erysipelas, cerebro-spinal meningitis, and according to Hutchinson in any inflammation of a shut sac. The simple passage of a catheter has been known to produce it, and Paget mentions *H. progenialis* as regularly following coitus. In this country it is more often seen during intermittent fever both amongst Europeans and Natives. The reason is manifest; intermittent and remittent fevers are far more common than acute febrile catarrh.

During the years 1869, 1870, and 1871, when malarious fever was very severe in this district, herpes *facialis* was by no means unfrequently met with amongst Europeans; but I can find notes of only 2, which I shall quote further on in connection with the cases met with amongst natives.

In the dispensary returns only 23 cases are recorded, but I do