

AN
INAUGURAL DISSERTATION

ON

Bandages.

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Bandages

It can scarcely be expected, that an inexperienced student, could at this enlightened period, say any thing new, or original upon any medical topic, and more especially upon one which has been so long, and carefully studied, and so extensively expatiated upon, as that of bandages.

Such being the case, what I shall have to say concerning the subject which I have selected, will consist principally of an assemblage of ideas, gathered from the remarks made upon it by our distinguished, and highly esteemed Professor of Surgery, together with those collected from various authors who have expressed their views with relation to it. I have endeavored as far as possible, to clothe these ideas with my own words; but in many places (being unable fully to express them otherwise,) I have adopted almost the

exact phraseology of those authors, whose works I have examined.

The Bandage justly ranks among the most important agents granted to man, for the prevention, and cure, of the many disorders to which he is subject. It is the main dependence of the surgeon; his sheet anchor. Take this from him and what has he left? his condition would be little better than that of a mariner, upon a troubled sea; with not one anchor left to bind down, and secure his foundering vessel. his only remaining hope is that chance may take him through in safety. But give him an anchor, one to be relied upon, and he feels as secure upon the heaving bosom of the mighty deep, as if his ship were safe in port, and cabled to

the shore: provided he is an experienced man, and one who understands his calling. Just so it is with the skillfull surgeon. Take from him this main support; and he is in many instances, of little more benefit to suffering humanity, than is the common herd of untutored quacks, and nurses that surround him, and often would he have to stand with folded arms, and look upon his helpless patient whose very lifes blood is gushing forth in mighty streams or perhaps is being rapidly devoured by the action of inflammatory disease, without having it in his power to staunch the crimson flood, (except for the moment,) in the one case, and in the other of checking the progress of the fell destroyer, and of commanding it to desist from its work of death. But let us view him in

another light: let us suppose him accompanied by this mighty enemy of disease, the all-powerful bandage, and he no longer fears the worst that can befall him. With this great agent at his command, he feels prepared to meet almost any emergency. With this he binds his suffering patient's wounds, stops the flow of blood, and commands his arch enemy inflammation to stop. Full well aware that by its proper application, all his ends may be accomplished.

Seeing then the great advantages to be obtained by the use of this remedy, How very important is it that we should thoroughly understand it in all its different forms, modes of application, and "modus operandi":

Bandages are of ancient origin, are made

of various material, and are of a variety of forms. They are made of linen cotton, woolen &c. &c.; linen (old) is to be preferred; but as it cannot at all times be easily obtained, a good article of cotton cloth (domestic) out of which all the starch has been washed, is the material most usually employed. Woolen bandages, though they answer the purpose very well, in many respects, are generally considered inferior to linen or cotton, in as much as they keep up irritation to some degree, upon the skin, unnecessarily heat the parts, and are soon soiled. They are also too distensible and are not always readily obtained. Gum elastic may also be used, and in many respects possesses great advantages over all other kinds. But they are very

liable to distension under the influence of heat, and to contraction from cold.

They also yield too readily to muscular action, and might owing to these properties give rise to dangerous irregularities.

Thread-ribbon bandages, are also sometimes used; but their use is limited; as they are hard and liable to slip; the edges too are sharp, and apt to cut the skin.

Bandages are classed under two heads. General & special. Under the head of general bandages, come containing, compressing, circular and roller bandages. also tail, "T" shaped, square, and triangular bandages.

Under the special class are arranged, such bandages as are peculiarly adapted

to those regions of the body in which they are required. — Thus we have special bandages for the cranium, face, eyes, nose, lips, chin, neck, thorax, abdomen, genital organs, scrotum, for diseases of the arms & perineum, for the upper and lower extremities, and bandages in short, for wounds, and fractures, of any, and all parts of the body, and are all applied in the manner best suited to that portion of the body, upon which they are to be used. They vary much in their dimensions; for instance we have roller bandages not over a yard, while others exceed ten yards in length. The average length is from three to six yards, which however depends very much upon the size of the diseased parts and the number of turns we wish to make. As to the

width, it is scarcely ever less than three fourths of an inch, and in the roller (for limbs) rarely ever more than four inches. But bandages for the body are often much broader. Bandages of about three fingers, or two and a half inches in width, are the most common, and also the most convenient. The narrowest kind are mostly used for the fingers, and penis. The widest—as was said above—for the body: (chest and belly.)

Bandages are useful, not only for the mere tying up of wounds, but by them many of the most important operations in surgery are performed: more interesting, though less striking, than the cures effected by the knife. In wounds, in abscesses, in fistulas, in any general disease of a limb, bandaging is the chief

operation for relief. What the knife
cures it partly destroys. The bandage,
while it cures also saves.

Although in recent wounds it is with
plasters and sutures that we unite the
parts point to point, yet it is with
the bandage that we support the
limb, preserve the parts in continual
and perfect contact with each other,
and prevent strains upon the sutures
with which the parts are immediately
joined. Besides, we often unite parts by
means of the bandage alone. The uni-
ting bandage has long been known by
that name. In gunshot and other
contused wounds, though it would be
imprudent to press the parts too closely
together, since it is impossible that
they should entirely unite; yet the

gentle and general support which we give by a compress and bandage, prevents them from separating far from each other, unites the parts early, and lessens the extent of that surface which must naturally fall into suppuration. Although in the hemorrhage from amputations, or any regular operation in surgery, we trust to ligatures alone; In the hemorrhage from wounds, we cannot always find the artery; we dare not always cut, for fear of greater danger, we are often alarmed by bleedings from uncertain vessels, from veins as well as arteries, these are hemorrhages to be suppressed by compresses which are but assistant instruments, serving to give the bandage its perfect effect. Frequently in bleedings near the

groin or the axilla, in the angle of the jaw; wherever the bleeding is rapid, the vessels uncertain, the cavity deep, and the blood not to be controlled by a tourniquet, and where circumstances forbid a deliberate and slow operation, we trust to compress and bandage alone. Among all bandages enumerated and described by various authors, the Roller occupies the most conspicuous position. It is far the most frequently used, and is in some sort what the history is to operative surgery. It is the universal bandage. Indeed almost all bandages are presented to the surgeon under the form of a cylinder. hence the name Roller.

As this is the only bandage in very general use it is the only one concerning which we will go into detail. It may

be thus described: It consists of two extremities, one which occupies the centre of the cylinder, called the internal extremity, and an external or free one, which is found upon the surface of the cylinder, of two edges, and two surfaces, an internal and external.

To be able to roll a bandage well, is an acquisition of no small importance to the surgeon. It is essential that it should be performed with quickness and dexterity. To do this, that which is to be the internal extremity should be folded upon itself several times in order to form an axis upon which to roll. This axis is then held by its ends between the thumb and fore, or middle finger, of the right hand. The loose portion of the bandage is then thrown across the

radial side of the fore finger of the left hand, and is held flat in that position by the thumb of the same hand; while the other hand draws it towards it, by successively turning it upon the initial axis. it is thus formed by degrees into a roll. While performing it in this manner the external surface looks upwards, and the hand employed in turning it draws it from above downwards, and from before backwards. There is another method of rolling it, which is performed by drawing the cylinder from below upwards, and from behind forwards, while the external surface looks downwards.

When thus wound up, the bandage is said to be rolled into a head; and is then ready to be applied.

Bandages are also frequently rolled into

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two heads. which is done in the same manner as has been described, with the exception that we begin at one end and roll to the middle of the bandage, where we stop, and then roll the other end in the same manner, very frequently one roll is made smaller than the other. When the roller is to be used as a uniting bandage, to be applied around any part to draw the lips of a wound close to each other, we make a slit in the roller and pass one of the rolls through it, thus making the decussation of the bandage very sure, and giving it a peculiar effect upon the wound.

The proper and judicious application of a roller bandage, however easily it may be described is nevertheless a feat.

difficult to be performed: and much practice is requisite to enable us to do it with dexterity. When we wish to apply it, the bandage rolled into the form of a cylinder, is held in the hand, by the two extremities of its axis.* Its free end is then applied, with its external surface next to the surface of the part to be bandaged. This end is held in place by the thumb of one hand, (usually the left) while the other draws moderately upon the rolled head to unroll it, while traversing the circumference of the limb. To prevent the free end which has been applied, from slipping, it must be secured by several circular turns, one upon the other. In continuing to unroll the cylinder, care must be taken to hold it as little distant

* In unrolling the bandage during its application, the Roll is held between the thumb and fingers like a ball. The backs of the fingers being next to the internal surface.

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as possible from the surface, and more of it than is required for a half turn, should never be unrolled at once.

We proceed in this manner until the roll is exhausted, and the central end becomes free, it is then to be fastened. This is ordinarily done by means of pins and there are several modes of applying them.

The first is with a single pin in the middle of the end of the bandage, with its head turned toward the free extremity to prevent it from being detached by the traction of the bandage. If this however is wide, one pin will not answer well, as the edges will turn up. We therefore either turn down the corners to prevent them from curling, or we use two pins, one in either edge in the same manner as when a single pin is used.

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Sometimes the pin is placed crosswise but this manner is not generally approved of. In endeavoring to describe the manner of applying the roller I do not know of any illustration more plain and easily understood, than that of Velpeau in his "operative surgery". Let us suppose (says he) that we are treating the lower extremity. We must procure a bandage of the proper length, rolled into a cylinder about three inches wide, dry or wet according to the indication, and begin by surrounding the foot with it. If a sufficient number of competent assistants are present one of them holds the heel fast with one of his hands, and the digital extremity of the foot with the other. While a second assistant places near the pelvis of the patient, supports

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the lower part of the thigh. so that the whole leg is sufficiently raised, to permit the different turns of the bandage to be freely passed, around it.

If we are deficient in assistants, it is necessary that the heel of the patient should be supported upon the knee of the surgeon, on the edge of a chair or some other insulated prop. This being done, we apply the external surface of the free end of the bandage to one of the malleoli, the external malleolus if it is the right leg; and the contrary for the left.

This is also on the supposition that the surgeon uses his right hand better than his left.

The extremity being held upon this point by the left hand. The bandage is passed by its external surface upon the dorsum of the inner edge and the sole of the foot.

and brought to the root of the little toe. We then make a first turn, then a second which covers two thirds of the first; then a third and fourth, following the same rules till we approach the instep: there the bandage is carried back by the inner side, and passed by the outer side, around the lower part of the leg, on a level with, or a little above the ankles; so that the turns upon the foot resemble the figure 8 in their connection with those of the leg. In thus applying it, difficulties present themselves which practice alone enables us to surmount. The malleoli and the heel, form three projections separated by unequal depressions. If the roller bandage is to be merely a containing one, we can proceed without any great inconvenience. But however

little may be the compression it exercises
 these parts are to be covered uniformly.
 The best mode then in applying it, is to
 employ a glutinous bandage: in this
 case we unroll the cylinder perpendicularly
 to the surfaces, and the reverses that
 we are obliged to make, to change its
 direction, having no tendency to slip
 we are thus not compelled to leave any
 vacant space; but cover every point of the
 entire region without much difficulty.
 In bandaging the foot and leg, we meet
 with a difficulty upon the instep: which
 forming (from the metatarsus to the base
 of the malleoli) a sort of neck, which
 necessarily requires a great number of
 turns, and which being the point of
 departure to a great number of compressing
 radii, seems to accumulate upon it

a more considerable share of pressure than any other part in the vicinity. hence it is there that patients chiefly feel the pain.

That phlyctenaeal sores, and gangrene form, if the bandage has not been properly applied. It is necessary therefore to be careful that we press as little as possible on this spot, and to endeavor not to concentrate upon it the different turns that are to cover the heel.

Before arriving at the instep, and especially in order to continue the bandage in the direction of the leg, we are obliged to make reverses in the act of bandaging. a reverse consists of a fold made in such a manner as to cause the upper edge to become the lower, and its outer surface the inner one. These reverses to make them as little inconvenient as possible, should be abrupt; that the oblique edge they form may not be much longer than the width

of the bandage. Otherwise it would be like a cord which would injure the parts by exercising unequal compression. To make these folds, whether from above downwards, or from below upwards, according to the place where we apply them, the surgeon fixes the last point of the bandage which has been unrolled, to the surface of the limb: while with the other hand which has separated the cylinder but a very little extent from the bandage; he turns it suddenly upon itself, without drawing upon it, and as if to cross its two edges; That being done, he continues to unroll it until he comes back to the same point, following the rules above indicated, so as to repeat the same manipulations a certain number of times if the form of the limb requires it. These reverses are indispensable wherever the parts are of a conical shape; whether it be at the foot.

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leg, or forearm. The parts enlarging from below upwards, render it necessary (in order to bear perpendicularly on all the points of their surface,) that the turns of the bandage should be made to assume a spiral form. To have a roller bandage applied with perfect regularity; it is necessary in these regions that the upper turn (which would otherwise fly off in a diagonal direction,) should be brought back by a fold made as quickly as possible to the inferior turn which latter is to remain in a circular position; if we desire that it should be in part lapped over by the other.

If the reverses are not properly made, puckers will be produced: that is the bandage irregularly applied. exercises compression by only one edge, while the other end flares out and gives it a tendency

to be displaced. Such an arrangement not only destroys all appearance of neatness, or elegance. but it ^{causes the edge to} also bind or cut the limb like a cord wound round it spirally, with the coils an inch apart; leaving spaces entirely uncompressed, and causes the dressing to become loose from the first.

Upon the foot it is necessary to make three or four reverses. From the malleoli to the lower part of the calf they may not be necessary, but from that point to within some fingers breadth below the tubercle of the tibia, they are absolutely necessary and require much care. In approaching the knee not quite so much caution is required.

In order to give an appearance of elegance to the whole arrangement, the reverses should be made as nearly as possible on a line with each other. But we must be particularly

careful not to make unequal pressure upon any part, merely to give an appearance of regularity to the dressing.

As the limb will of course vary as to its shape and size, in different individuals, it would not do to submit the application of the roller to rules too precise: i. e. to set down the exact number of reverses to be made in a certain distance, or whether it is to be applied circularly or spirally, &c. &c. It should press flat upon the skin and every where alike. When the roller is used for compression we use padding in connection with it; especially upon the foot; or any part where the bone is near the surface. With the roller bandage as with all others an equal amount of pressure produces much less effect upon parts thickly covered with flesh, than on those where there is less.

What has been said of the roller, with regard to the leg, is applicable also to the fore arm: except that the hand (being well supplied with flesh on both sides,) does not involve as many difficulties as the foot, and has no tibial crest, like the leg, endangering too severe a pressure upon the teguments in a right line. When we wish the bandage to remain on for some considerable length of time, it is sometimes necessary to fasten the looser turns by a few pins or stitches. But if this fastening be a matter of much importance, nothing would be so good, as a solution of dextrine, or Flanders glue, with which the bandage is to be saturated previous to its application.

(Just here—having omitted it in its proper place—it may be advisable to state that bandages are ^{very} frequently moistened with

spirits. solutions of various articles. such as gum aloes &c. and very often in water alone.)

When we bandage the fore arm we should carry the bandage from within outwards. being careful to keep the hand in a state of supination in order to preserve the interosseous space between the radius and ulna. The thumb too should be left out the bandage frequently requires a small slit to be made in its edge to prevent it from pressing too much upon that member.

In applying the roller. it must be put on smoothly. from the very extremity of the limb to which it is applied.

The member must be thoroughly supported in all its lower parts, in order that it may bear the pressure above. In the bandaging (for example) by which a wounded artery at the bend of the arm. may be

cured, must be begun at the tips of the fingers; and many authors insist that each individual finger should be bandaged. The roller must be continued over the hand with the greatest attention, and care not to leave a single point unsupported, or liable to strangulation. it must be rolled carefully and firmly upwards along the fore arm and on to the axilla, thus supporting the whole limb by its pressure.

It was once (not very long ago,) the practice to draw the bandage as tightly as possible and it has been even said that - a ten horse power, would not be too great a force, to use in its application.

But this is entirely useless: besides it is a source of almost unufferable pain to the patient. The rule now is, to apply it only with sufficient firmness to keep the

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parts well supported, and in close apposition
and to keep the dressing from slipping off.
when thus applied. by the support which
it furnishes to a limb. it creates a sensa-
tion of pleasure rather than pain.

As has been said, the bandage is one of
the greatest remedies ever discovered. for many
forms of disease. Wherever inflammation exists,
it is looked upon as superior to all others.
and is even more valuable in its prevention
where it is likely to be developed.

It is often extremely valuable in exercising
compression to arrest hemorrhage. It has
long been successfully employed in the cure
of aneurism. Of the various ways of treating
indolent ulcers, that of a roller in connection
with adhesive strips, is the one chiefly relied
upon. In abscesses where matter is working
downwards along the limb, undermining the

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skin, and wasting it, insinuating itself into
and around the muscles, and penetrating
to the bones, the bandage does every thing.

In cases of fistula, or where an abscess has
hardened into a callous tube, it is a most
valuable application. Often much good is
known to result from the application of
a roller round the body of a woman after
parturition. It is of great service in keeping
the opposite surfaces of wounds in close
apposition, and in many other instances
too numerous to mention.

But it is in complicated cases of diseased
and swelled limbs, that we are sensible
of all the uses of a bandage.

By the bandage we dissipate the phlegmonous
swelling, abate the inflammation, prevent
the extension of matter, lessen suppurating
cavities, close the walls of fistulas, procure

the reunion of surfaces which have suppurated. The patient is sensible of an easy and pleasant firmness from the bandage, and the limb is actually supported against accidents; and prevents the further extension of the disease.

This effect of bandaging is observable, not only in the case of a well bandaged limb; but is equally observable, and interesting, in other cases. In varices, though a permanent bandage is usually required, yet sometimes the parts are so strengthened by a roller, that they recover their tone.

But the bandage like all other powerful remedies is also a dangerous one; and when unskillfully applied is often productive of the most disastrous consequences. Let us then endeavor by every means in our

power, to prevent it from being ever thus abused.
Let us always as far as in us lies use it
as it was originally designed to be used—
i.e. for the production of good and not
of evil. By doing this we will be enabled
to appreciate it as it justly deserves
to be considered, The greatest enemy of disease,
The best of friends to suffering mortals.
The highest boon to surgeons granted.

