

**The Writings of Hippocrates**

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46. In cases of displacement backward along the vertebrae, it does not often happen, in fact, it is very rare, that one or more vertebrae are torn from one another and displaced. For such injuries do not readily occur, as the spine could not easily be displaced backward but by a severe injury on the fore part through the belly (which would prove fatal), or if a person falling from a height should pitch on the nates, or shoulders (and even in this case he would die, but not immediately), and it also would not readily happen that such a displacement could take place forward, unless some very heavy weight should fall upon it behind; for each of the posterior spinal processes is so constructed, that it would sooner be broken than undergo any great inclination forward from a force which would have to overcome the ligaments and the articulations mutually connecting them. And the spinal marrow would suffer, if from the displacement of a vertebra it were to be bent even to a small extent; for the displaced vertebra would compress the spinal marrow, if it did not break it; and if compressed and straight, it would induce insensibility of many great and various kinds, so that the physician need not give himself any concern about rectifying the displacement of the vertebrae, accompanied, as it is, by many other ill consequences of a serious nature. It is evident, then, that such a case could not be reduced either by suction or by any other method, unless one were to cut open the patient, and then, having introduced the hand into one of the great cavities, were to push outward from within, which one might do on the dead body, but not at all on the living. Wherefore, then, do I write all this? Because certain persons fancy that they have cured patients in which the vertebra had undergone complete displacement forward. Some, indeed, suppose that this is the easiest of all these dislocations to be recovered from, and that such cases do not stand in need of reduction, but that they spontaneously. Many are ignorant, that by their ignorance, for they obtain credit from those get well. These are deceived in this way, for they suppose its spina process to be the vertebra themselves, because every one of them appears round to the touch, not knowing that these bones are processes from the vertebrae, as formerly stated; but the vertebrae are at a considerable distance before them; for of all animals, man is proportion to his bulk, has the belly (inferior cavity) the narrowest from behind to before, especially at the breast. When, therefore, one of these processes are severed, or fractured, either one or more, the part there appears lower than on either side, and for that reason they are deceived, supposing that the vertebrae are displaced inward. And the attitudes of the patient contribute also to deceive them; for if they attempt

to put themselves into a bent position, they are pained, from the skin being stretched at the seat of the injury, and at the same time the fragments of the bones would be drawn still more; but if they bend forward, they will feel easier, for the skin at the wound is thus relaxed, and the bones are less displaced to hurt them; and if touched, they shrink and bend forward, and the part which is touched appears empty and soft. All the circumstances now mentioned contribute to deceive the physician. Such patients speedily get well without any bad effects, for callus readily forms in all such bones as are porous.

47. There are many varieties of curvature of the spine even in persons who are in good health; for it takes place from natural conformation and from habit, and the spine is liable to be bent from old age, and from pains. Gibbosity (or projections backward) from falls generally take place when one pitches on the nates, or falls on the shoulders. In this case some one of the vertebrae must necessarily appear higher than natural, and those on either side to a less degree; but you no one generally has started out of the line of the others, but every one has yielded a little, so that a considerable extent of it is curved. On this account the spinal marrow rarely bears such distortions, because they are of a circular shape, and not angular. The apparatus for the reduction in this case must be managed in the following manner: a strong and broad board, having an oblong furrow in it, is to be fastened in the ground, or, in place of the board, we may scoop out an oblong furrow in the wall, about a cubit above the floor, or at any suitable height, and then something like an osken bench, of a quadrangular shape, is to be laid along the wall at a distance from the wall, which will admit of persons to pass round if necessary, and the bench is to be covered with robes, or anything else which is soft, so that it does not yield much, and the patient is to be stowed with vigor, if necessary, or baled with much hot water, and then he is to be stretched along the board on his face, with his arms laid along and bound to his body; the middle, then, of a thong which is soft, sufficiently broad and long, and composed of two cross straps of leather, is to be twice carried along the middle of the patient's breast, as near the axilla as possible, then what is over of the thong at the armpits is to be carried round the shoulders, and afterward the ends of the thong are to be fastened to a piece of wood which is to be adapted to the length of the bench laid below the patient, and so that the pestle like piece of wood resting against this bench may make extension. Another such band is to be applied above the knees and the ankles, and the ends of the thong fastened to a

similar piece of wood; and another thong, broad, soft, and strong, in the form of a wafer, having breadth and length sufficient, is to be bound tightly round the joints, as near the tips as possible; and then what remains of the wafer than the like thong, with the ends of the thong, must be fastened to the piece of wood placed at the patient's feet, and extended in this fashion, it is to be made upward and downward, equally and at the same time, in a straight line; For extension thus made could do no harm, if properly performed, unless one sought to do mischief purposely. But the physicians, or some persons who are strong, and not unskilled, should apply the palm of one hand to the hump, and then having laid the other hand upon the former, he should make pressure, attending whether the force should be applied directly downward, or toward the head, or toward the hips. This method of applying force is particularly safe, and it is also safe for a person to sit upon the hump while extension is made, and raising himself up, to let himself fall again upon the patient. And there is nothing to prevent a person from placing a foot on the hump, and supporting his weight on it, and making gentle pressure; one of the men who in practice in the palestra would be a proper person for doing this in a suitable manner. But the most powerful of the mechanical means is this: if the hole in the wall, or in the piece of wood fastened into the ground, be made as much below the man's back as may be judged proper, and if a board, made of limber, or any other wood, and not too narrow, be put over the hole, when a rag, folded several times or a small leather cushion, should be laid on the hump; nothing large, however, should be laid on the back, but just as much as may prevent the board from giving unnecessary pain by its hardness; but the hump should be as much as possible on a line with the hole made in the wall, so that the board introduced into it may make pressure more especially at that spot. When matters are thus adjusted, one person, or two if necessary, must press down the end of the board, while others at the same time make extension and counter-extension along the body, as formerly described. Extension may also be made with axes, which may either be fastened in the ground beside the bench, or the point of the axes may be attached to the bench itself; if you will make them perpendicular and over-reeping (like benches) a little at both ends, or at either end of the bench. These powers are easily regulated, so as to be made stronger or weaker, and they are of such force, that if one were to have recourse to them for a mischievous purpose, and not as a remedy, they would operate strongly in this way also; for by making merely extension and counter-extension longitudinally, without any additional force, one might make sufficient extension; and if, without making extension at all, one were only to press down properly with the board, sufficient force would be applied to the spine. Such operations, then, are excellent which admit of being so regulated, that they can be made weaker and stronger as required. And the forces are applied in the natural way; for the pressure above

forces the displaced parts into their place. Natural extension means parts which have come too near one another to their proper position; it is, therefore, antagonized with no powers which are better or stronger approved than those there; for extension along the spine downward has no proper hold at the neck or the os sacrum; and extension upward, along the neck and head, has indeed a hold; but extension thus made is unseemly to behold, and, besides, if increased, may occasion much mischief otherwise. I once made trial of the following plan. Having placed the patient on his back, I put below the hump a bladder, not inflated, and afterward introduced air into the bladder by means of a brass pipe connected with it. But the experiment did not succeed; for, when the man was fully extended, the bladder yielded, and the air could not be forced into it; and, besides, the hump of the patient was apt to slip off the distended bladder when they were pressed together. But when I did not extend the man strongly, the bladder was swelled up by the air, and the man became more bent forward than proper. I have written this expressly; for it is a valuable piece of knowledge to learn what things have been tried and have proved ineffective, and wherefore they did not succeed.

48. In curvatures forward of the vertebrae from a fall, or from some heavy body falling upon them, in general no one of them is displaced far beyond the others, but if one or more be so displaced, the case proves fatal; but, as formerly stated, the displacement is circular, and not angular. In such cases, then, the urine and faeces are more apt to be retained than in displacement backward, the feet and the lower extremities are colder, and the symptoms are more fatal than in the former case; and if they do survive, they are most subject to retention of the urine, and to loss of strength, and to torpor in the feet. But if the displacement be in the upper part, they experience loss of strength and torpor of the whole body. It is not so mechanical contrivance by which such a displacement could be reduced, unless that one might be benefited by suction on a bladder, or any other similar plan of treatment, such extension, as formerly described, I am not aware of any mode of pressure which might be applied along with the extension, like that of the board in displacement backward; for how could one apply pressure from before through the belly? (Inferior cavity?) The thing is impossible. But stretching, or stretching has any power so to co-operate with the extension, nor would the injection of air into the bowels have any effect. And to apply large cupping instruments with the view of drawing back the vertebrae which have protruded forward, shows a great error of judgment; for they rather pull than attract, and those who apply them are not aware even of this fact, for the greater they are, the more inclination forward the greater the instrument applied, the skin being forcibly drawn into the cupping-instrument. I could tell of other

modes of accussion than those formerly described, which one might fancy would be more applicable in such an affection; but I have no great confidence in them, and therefore I do not describe them. On the main, it should be known, respecting the accidents which I have briefly described, that displacements forward are of a fatal and injurious nature; but that displacements backward, for the most part, do not prove fatal, nor occasion retention of urine nor torpor of the limbs, for they do not stretch the

darts leading toward the intestines, nor occasion obstruction of the same; but displacements forward produce both these bad effects, and many others in addition. And truly they are more apt to lose the power of their legs and arms, to have torpor of the body, and retention of urine, who experience no displacement either forward or backward, but merely a violent contusion along the spine, while those who have displacement backward are less subject to these symptoms.



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