

REPORT ON SURGERY*

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NERVE-STRETCHING.

The following summary, gleaned from the "Bradshaw" lecture, delivered by John Marshall in December last, gives us the principal information now in our possession in reference to this recent operation. In the operation of nerve-stretching there is a palpable stretching. Nerves nearer to the spinal cord are rather more extensible than those at a distance. This may be owing to the relatively less thickness of the sheath. The distant nerves are smaller, but they are probably better protected. The nerves of the upper limb are more extensible than those of the lower limb, probably for the same reason that the nerves of the lower limb are better protected by sheaths; for we must recognize that it is the sheath that bears the strain when we pull upon a nerve. After a nerve is stretched it recoils. One observer states that after stretching a nerve it recoiled one-fortieth of its length. The safe therapeutic weight varies from about 1 lb. up to 30 lbs. The former, for the smaller nerves, as the mental, the latter for the great sciatic. When nerves are stretched, the epineurium and perineurium lose their wavy appearances and become straightened; the natural segmentation of the medullary sheath gives way to an irregular breaking up. Sometimes the tubuli break, and still more rarely the axis cylinder gives way. After this the nerve degenerates, and after the whole mass of nerve has become disintegrated, restorative changes follow and its function is gradually restored. Sensation and motion are the first to be extinguished, and lastly reflex action.

Effects on the Cord.—Practically there is no stretching mechanical effect propagated through the roots of the nerves to the spinal cord. In the sciatic, the stretching effect passes to the sciatic plexus, passes to the roots of the nerves, where it must disturb the spinal ganglia on the posterior roots and it must disturb the dura mater. It may by disturbing the dura mater shake the cord a little through the ligamentum denticulatum on either side, but we find no change of tension in the intra-spinal or intra-meningeal part of the nerve, and no movement in the cord. The effects are

bilateral. The effect of stretching nerves on one side passes over in various degrees to the other side of the nervous system.

Therapeutics.—Specially successful in peripheral paralysis and neuralgias of all kinds; less so in tetanus; still less so in epilepsy and tabes. In the case of neuralgias, the presence of *nervi nervorum* is assumed, and that it is through the rupture of these that the pain is got rid of. Nerve-stretching is said to act, not only by rupturing the assumed *nervi nervorum*, but in other cases by partially numbing or paralyzing the internal tubules, arresting their function for a time, or, further, by indirect effects on nerve centres. In tabes and central neuralgias it is said to act by producing some indirect effect upon central nerve elements through trophic changes, probably induced by the disturbance of vasi-motor action.

The operation is performed, with one exception, by exposing the nerve, lifting it with the thumb and finger until a *palpable* stretching is produced. Sufficient force is to be used until the nerve sensibly yields to your traction—until you feel an internal creeping movement in the particles of the nerve, of the sheath, no doubt; until you feel a certain attrition and vibration going on—and you must educate yourself to that, and then you will be safe. The thumb and finger can stretch with a force equal to a weight of 30 lbs., the amount said to be sufficient for the largest diseased nerve, the sciatic. Stretch both ways for neuralgia. It is of less consequence to stretch from the extremities in tabes; it is essential to stretch from the trunk or body. A continued even force, firm and resolute, is desirable. Without cutting, Sayre reports, a positive improvement in tabes in thirteen out of fifteen cases, from the use of his suspensory apparatus, for ten minutes three times a week, the sciatic can be well stretched by forced flexion of the lower limb. It appears from the above that the cutting operation should not be resorted to for tabes. The dangers are those of chloroform, thrombus, pyæmia, and disease of the spinal cord, set up by the operation.

NEUROTOMY.

To the above collection of material in reference to nerve-stretching, I might add the result of neurotomy in a recent fatal case of traumatic tetanus. Patient had the last phalanx of the left

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