

within outwards, may not extend to the distal end of the canal, and so the finger might readily fail to be pushed into the canal from without inwards.

(3) The patient usually stands erect while being examined and coughs with the head raised or turned sideways so as not to cough in the doctor's face. The effect of this posture is to cause a contraction of the muscles of the abdomen and a tightening of the fascia lata due to the strain of standing erect. This results in a shortening and straightening of their fibres which has a special importance in the neighborhood of the pillars and the conjoined tendons, causing a diminution of the inguinal canal in the first place, and of the femoral opening in the second, while in the case of an umbilical defect, the recti are more closely approximated and unyielding. This decrease of size may well account for and is a reasonable explanation of the fact that a hernia will show itself at one time and not at a subsequent occasion in the same individual. Of course, this is not the exclusive reason in every case, as other factors also have to be considered.

(4) In lying down, the act of coughing also throws the abdominal muscles into spasm before the explosive release of air from the throat occurs. Hence all those points of weakness in the abdominal wall are tightened and diminished, and it is only where permanent stretching or injury has taken place at these locations that a cough will cause the abdominal contents to protrude. For in the normal body the inguinal canal, for example, by reason of its valve-like structure, is more tightly closed during straining than at other times.

In addition, in the horizontal posture the force of gravity is acting away from the openings and thus the bowel and omentum lack this factor that is present naturally during such times as the hernia would come down of its own accord in the ordinary course of events. This is well shown in those cases of huge inguinal herniæ in which the scrotum may bulge as large as two fists when the patient stands, but which may show very little swelling even during a cough or two in the horizontal position with all the contents inside.

(5) In the act of coughing, the whole belly wall is jerked and a sudden impulse is conveyed to the examining fingers, whether there be a hernia or not; and furthermore, this sudden jerk may be felt at any point on the abdominal wall. This is a confusing factor that may get rid of as I shall show. In an excessively lean person the rings may bulge considerably where no hernia exists. At the opposite extreme, in a very fat individual the thick pad of fat blurs the tactile impressions, especially when this is at the same time confused by the sudden impulse, due to the cough.