

end of the kidney and the internal abdominal ring. During the third month, the important structure, which John Hunter called the gubernaculum testis, makes its appearance; this is a band which stretches from the internal abdominal ring to end above, by being attached to the epididymis and body of the testicle, and to the peritoneum of the posterior wall of the abdomen; this band seems sufficient to hold the testicle near the abdominal ring, and to prevent its ascending with the kidney. During the sixth month the testicle and epididymis begin to acquire a double fold of peritoneum, constituting a mesorchium, and thus the gland becomes free in the abdomen; the lower fold of the mesorchium terminates in the tube of peritoneum, known as the processus vaginalis, which descends into the scrotum; the fibres of the gubernaculum blend with the extremity of the processus vaginalis, and are probably accountable for the formation of this peritoneal pouch.

We must look upon the gubernaculum testis as the probable cause of the descent of the testicle into the scrotum. This structure is composed of a central band of unstriped muscular fibres, and a number of striped fibres prolonged upwards from the abdominal wall. We have seen that it is attached above to the testicle and the epididymis, and we wish now to study its inferior attachments. Some of its fibres have been demonstrated piercing the abdominal wall and extending into Scarpa's triangle; others are found attached to the pubes and the root of the penis. At a later period of development, fibres of the gubernaculum are found running on to the bottom of the scrotum, while in the eighth month several of the fibres pass into the perineum, and end over the tuberosities of the ischium, or may blend with the sphincter ani.

The shortening of the gubernaculum, or that portion of it which is attached above to the testicle and below to the bottom of the scrotum, is probably the cause of the descent of the testicle into the scrotum; the striped muscular fibres, which I alluded to as constituting part of the gubernaculum, when they are transferred by the descent of the gland into the scrotum, constitute part of the cremasteric fibres, as found in the coverings of the cord.*

In the female, the gubernaculum is attached above, close to that part of the genital cord which becomes the uterus; below it passes down the inguinal canal, and persists, in the adult, as the round ligament of the uterus. We also have in the female a process of peritoneum which corresponds to the processus vaginalis in the male; this process of peritoneum in the female passes down the inguinal canal, and is known as the canal of Nuck. These facts might suggest to us the possibility of the gubernaculum having an attachment to the ovary, similar to that of the testicle, and in such a case the ovary might be guided into the inguinal canal, just as the testicle is caused to descend into the scrotum. In April, 1888, I saw Mr. Bland Sutton operate on a woman aged 35, in the Middlesex Hospital, London. She had a tumor in the right inguinal region and right labium. She had been wearing a truss, but it caused her pain and induced vomiting at times. The tumor enlarged at the menstrual periods, but menstruation went on without any inconvenience. An incision was made over the tumor, and on opening the sac the ovary and Fallopian tube were found in the canal of Nuck. The ovary and tube were removed through the inguinal incision, and the neck of the sac ligatured.

The relations of the ovary in this case are not similar to the relations of the testicle in the scrotum, because in the case of the testicle the gland passes down behind the processus vaginalis, whereas the ovary was actually within the pouch of the peritoneum forming the canal of Nuck; nevertheless it is conceivable that the ovary, through the agency of an unusually attached gubernaculum, should be guided towards the inguinal canal and there fixed; having been placed in that position, it might readily be forced down into the canal of Nuck by any increase of the intra-abdominal pressure.

We have now to consider the factors which have to do in the production of the condition of retained testis.

1. The action of the gubernaculum testis may be deficient. Lockwood* describes a case in

you to the interesting lectures by Mr. C. B. Lockwood, published in the *Journal of Anatomy and Physiology*, vol. xxii., No. 38, pp. 461-502.

* *British Medical Journal*, 1886, vol. i., p. 444.

* For further details concerning these structures, I must refer