PART II

VASECTOMY AND ITS EFFECTS ON
THE STRUCTURE OF TESTIS IN
ALBINO RATS
PART II

CHAPTER I

INTRODUCTION

AND

OBJECTS OF THE PRESENT STUDY
INTRODUCTION AND OBJECTS OF THE PRESENT STUDY

Congenital absence or occlusion of vas deferens with no atrophic changes in the testicles, was detected during dissection of cadaver or at operation table by Turin (1786), Gosselin (1847), Hunter (1841), Curling (1866), Simmonds (1898) and Brack (1921). This was an impetus for probing further into the effect of such occlusion. Thus, studies on the changes in the testis and its appendages under such circumstances commenced.

At a later period experimental vasectomy was introduced by a number of outstanding workers with a view to noting the effects of artificial occlusion of the vas deferens on the generative organs, particularly the testis. In the first quarter of 20th Century Bouin and Ancel (1903, 1904) and other performed experimental vasectomy that particularly helped to ascertain the effect of such operation on interstitial cells of the testis in the production of male sex hormone.

At present, the problem of "population-explosion" is a crucial one all over the world, particularly in China and India. The question 'how best to tackle this problem' is, therefore, one that engages all serious endeavours to-day. Phadke (1961) mentions that intensive propaganda and mass sterilization, especially in the male by vasectomy seems to be the only immediate answer to our urgent need for reduction in the birth rate.
Having had to perform vasectomy on a number of willing human subjects for the purpose of permanent sterilization between 1955 - 1958, but having no chance to follow up these cases to study the effects on the structural pattern of the gland, I developed an ardent desire to perform experimental vasectomy on easily available animals to observe these changes after vasectomy.

With a view to equipping myself for the work as contemplated, I started collecting relevant literature on vasectomy and found that there exist differences of opinion amongst the reputed workers on experimental vasectomy. One opinion is that there are no atrophic or degenerative changes in the testis as a result of vasectomy (Cosselin, 1853; Curling, 1866; Guyon, 1895; Spangaro, 1903, 1904; Shatlock and Seligman, 1904; Wallace, 1905). The other school maintains diametrically opposite views and is of opinion that there occur atrophic or degenerative changes in the testis due to vasectomy (Bouin and Ancel, 1903, 1904; Ancel and Bouin, 1923; Richon and Jeandelize, 1903; Myers, 1915; Massaglia, 1920; Kuntz, 1921; Wheelon, 1921; Wagenen, 1925; Sharpey-Schäfer, 1926; Bell et al, 1953). There is, however, a third school of opinion that neither accepts nor rejects totally the views of either group mentioned above. This school attempts to find out the causes for the differences in the testicular manifestations as an effect of the same experimental operation.
The controversy concerning the effects of vasectomy that remains unresolved in many respects even to-day, the exigency of new circumstances created by over-population all over the world that demands mass sterilization by vasectomy, and above all, the fact that work on experimental vasectomy still leaves room for further study and remains practically neglected for the last 4 decades, are considered factors that justify further study on the subject.

It was, therefore, decided to take up experimental vasectomy in albino rats and study its subsequent effects. This species was selected since most of the earlier work was done on the same species and therefore, the findings of the present study could be compared with those of earlier workers, as also because of the ease of raising known litters of this animal and the facility of operative procedure.

From the review of literature, it will be revealed that some aspects of gross and minute anatomy of the vasectomised testis require further elucidation.

Most of the workers (Curling, 1866; Tournade, 1903; Shattuck and Seligman, 1904; Wallace, 1905; Warwick, 1925; Nanidez, 1924; Oslund, 1924a; Humphrey, 1926) on experimental
vasectomy in the past have mentioned that there occurs some enlargement of the epididymis as an effect of vasectomy but enlargement to what extent does occur, is not mentioned. The present work, however, aims at determining the ratio of weight between the testis and epididymis in both vasectomised and control sides separately and then comparing them to find out definite data in respect of the actual extent of enlargement of the epididymis.

Available relevant literature does not throw light on the size of vasectomised testis neither does it give data based on the systematic studies of the absolute weight of the testis and its relative weight in proportion to the body weight, and its dimensions. The present work aims at determining the same in order to assess the actual magnitude of the gross changes, if any, in the vasectomised testis. The present work, further, aims at noting any other change in the gross anatomical aspect of the vasectomised testis.

Brissaud (1880), Retterer and Voronoff (1923), Nonidez (1924), mention that the seminiferous tubules are considerably dilated following vasectomy. Brissaud further mentions that the seminiferous tubules get narrowed and attain their functional neutrality in the long time. None of the above workers, however, is seen to have determined the actual extent of dilatation of the seminiferous tubules by micrometric measurements.
The present work aims at finding out the effects of vasectomy on the testis not only by routine macroscopic and microscopic observations but also by systematic micrometric measurements of the diameters of the seminiferous tubules, as well as of the different structural components of the vasectomised testis and comparing them with those in the 'Control' testis.