prostate was hypertrophied in every case. I only ventured to excise a portion of the prostate in 2 out of these 8 cases; one of these two cases died, and one recovered. The age of the patient who died was 81, the age of the patient who lived was 87. The latter is living now, wonderfully well and comfortable, and his case is recorded in the *Transactions of the Clinical Society*. He has never consented to allow the suprapubic wound to close, but has worn my suprapubic apparatus for a year. In several of my cases I am satisfied that the patients would have succumbed if prostatectomy had been performed; and I cannot agree with Mr. Mayo Robson when he says that the addition of a prostatectomy to a suprapubic lithotomy does not, in his opinion, add materially to the risk. It must, however, be remembered that an enlarged middle lobe may not only cause retention of urine, but may act as a foreign body in the bladder when very large, and cause intense irritation and misery; when this is the case, its removal must be undertaken at all hazards.

Taking into consideration, therefore, our present knowledge, it appears that when a catheter patient has got into such a state that the frequent use of the instrument renders life burdensome, the bladder should be opened above the pubes. By this means the organ can be completely explored, any calculus extracted, the bladder drained and rested afterwards. If any intravesical prostatic tumour is found, much must depend upon its size. If very large, it is probably a source of great irritation, as well as a urinary obstruction, and it had better be removed. When, however, the growth is small, and especially when a stone has expectedly or unexpectedly been found, which may have been the cause of nearly all the vesical misery, I should advise anyone to hesitate before opening the prostatic capsule and enucleating the lobes. Also, when an elderly man, who leads a tolerably comfortable life by passing his catheter even as often as every three hours, but who is anxious to be relieved altogether of his offending prostate, applies to the surgeon, I should still advise him to hesitate. Prostatectomy is a dangerous operation, only necessary in men already in broken health, and uncertain, even in cases of recovery, of being followed by release from the need of using the catheter.

CARDIAC INSUFFICIENCY IN ITS RELATION TO ABORTION.¹

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In his *Clinical Lectures on Diseases of Women* (1883), Dr. Matthews Duncan says: "It is only recently that great care has begun to be paid to the bearings of disease of the heart upon pregnancy and parturition; I know of none paid to the bearings of disease of the heart upon abortion. It is a subject well worthy of attention and study." It is now nearly five years since the above quotation arrested my attention, and during this time I have endeavoured, both in my private and hospital practice, to trace out how far a connection exists between morbid conditions of the heart and the occurrence, or recurrence, of abortion. So far as my researches into the literature of the subject have gone, I cannot discover that any great advance has been made in our knowledge of the relation between heart conditions and abortion, or that any author has endeavoured to follow out the investigation suggested by Dr. Duncan's words.

The pathology of intra-uterine death has been ably treated by Dr. Priestley in his recent *Lumleian Lectures*,² but even here I have failed to find anything more than a passing reference to the influence exerted by cardiac conditions on the progress of pregnancy. In his work on *Heart Disease During Pregnancy*, Dr. Angus MacDonald has, it is true, pointed out that in a large proportion of cases of mitral stenosis pregnancy is terminated by the onset of spontaneous premature delivery, and Duroziez, in his paper on *Pure Stenosis of the Mitral*,³ remarks that this lesion is apt to be accompanied by a special tendency to the occurrence of abortion and premature delivery; but both these authors dwell more extensively on the onset of premature delivery in the later weeks of pregnancy, and confine their attentions principally to mitral

valvular disease. How great an influence valvular disease of the heart may have in determining the occurrence of abortion, and what the relative value of the individual forms of valvular disease may be to each other in this respect, I am not yet prepared to state, but, so far as my observations have at present led me, I am inclined to think that the presence of valvular disease does not, broadly speaking, interfere materially with the progress of pregnancy, provided that sufficient compensatory hypertrophy of the muscular walls be present.

In this communication my endeavour will be to show that putting aside the consideration of valvular affections, the absence or insufficiency of the usual hypertrophy of the heart which should accompany every pregnancy is a not uncommon cause of the occurrence and recurrence of premature emptying of the uterus in the earlier months of pregnancy. Before bringing forward the clinical cases and other arguments which seem to support the view propounded, I should like to dwell briefly on two points—first, the normal hypertrophy of the heart during gravidity; and, secondly, the influence of a failing left ventricle on the systemic circulation at its periphery.

Without discussing how far Larcher, Ducrest, Beraud, Blot, and other *savants* of the French schools may have exaggerated the amount or overrated the importance of the cardiac hypertrophy of pregnancy, without attempting to settle the question whether the left ventricle only has its muscular walls thickened, or whether other parts of the heart share in the increase, I would take it as an established fact that at the close of a pregnancy the left ventricle is found considerably hypertrophied, and that this hypertrophy is due to the increased work entailed on the heart by the growth of the uterus and its contents. As a deduction from the foregoing truth, I would formulate, that if this hypertrophy is absent or insufficient, the heart will, as pregnancy advances, show signs of failing power, or, conversely, that if the heart exhibits symptoms of failing during the progress of gravidity, we may reasonably presume that the compensatory hypertrophy is either wanting or insufficient in degree.

The second point is this: the condition of the systemic circulation at its periphery depends very largely on the mode of action of the left ventricle. If the latter is healthy, vigorous, and has good driving power, then, *ceteris paribus*, the circulation in the arterioles and capillaries is brisk, the walls of the small vessels are normal and intact, and leaking or extravasation does not take place; but if, on the contrary, the left ventricle is acting in a failing or imperfect fashion, then the blood stream at the far points is sluggish, the walls of the capillaries and arterioles tend to become unhealthy, and dropsy or small hemorrhages are very likely to take place.

Taking these two points as established, it will be well now to pass on and consider some cases which will illustrate abortion due to cardiac failure.

CASE I.—Mrs. N., aged 34, married fourteen years, is a woman of large, flabby build. She came to my out-patient department complaining of frequent miscarriages. Her history was as follows: She had given birth after marriage to two healthy full-term children, the two pregnancies following each other rather closely, then she had had seven miscarriages, the last only a fortnight ago. Her health has never been good since the last full-term pregnancy; during and after this she had suffered with palpitation, shortness of breath, and inability for much exertion. All her miscarriages had taken place between the end of the third and fourth months. According to her own account, she usually felt fairly well until well advanced into the third month of her pregnancies, then she began to suffer with great shortness of breath, palpitation, precordial pain, and swelling of the legs. This state of things became intensified gradually, and then abortion followed. Examination of the heart showed that the apex beat was hardly defined and very feeble; it was slightly outside the vertical nipple line; there was no valvular *bruit*, but the first sound was short and feeble. The area of cardiac dulness was, if anything, somewhat increased. A mixture of ammonia and digitalis was prescribed, and 10 grains of saccharated carbonate of iron ordered to be taken morning and evening. Under this treatment she improved materially, and again became pregnant. When three months gone she was still doing well; the swelling of the legs and other signs of cardiac failure had not appeared. Wishing, however, to give the heart every chance, I took her into the New Boynton Ward, and gave her the opportunity of complete rest, good feeding, and freedom from muscular strain. Under this régime she went on well, and reached safely the sixth month of

¹ Read in the Section of Obstetrics at the Annual Meeting of the British Medical Association, held in Leeds.

² *JOURNAL*, 1887.

³ *Archives Générales de Médecine*, Juillet, 1877, p. 47.

pregnancy, then, feeling herself so well and thinking herself safe, she returned home, resumed her laborious occupation, became rapidly worse, and miscarried at the end of the sixth month. Had she remained in the hospital quietly, I think there is little doubt she would have gone to full term. A vaginal examination was made in this case on several occasions, during both the pregnant and non-pregnant states, and beyond a slight bulkiness of the uterus nothing abnormal could be detected. There was no evidence of any syphilitic taint. It is rather noteworthy that this patient had only two sisters, and that each of these women had valvular disease of the heart, one mitral stenosis, the other a mitral systolic murmur.

CASE II.—Mrs. X., aged 32, is a fairly healthy looking woman. She has been pregnant five times, but has never carried a child up to full term. With her first two pregnancies she went as far as six months and then miscarried; with her last three she only reached the fifth month. Her family history is good, and after careful investigation no trace can be discovered of a syphilitic taint. Vaginal examination reveals a perfectly normal condition of her uterus and its appendages. In the account she has given of her various pregnancies there is, however, one constant symptom which is very suggestive, and that is that in all her pregnancies she has suffered from repeated attacks of fainting. On each occasion when she has been in the family way, these attacks of fainting have set in towards the end of the third month and continued until the pregnancy closed, becoming more frequent and worse in the later months. In the intervals between her pregnancies she is free from this symptom. When I saw her for the first time, soon after the close of her fifth pregnancy, a very careful examination of the heart was made, but no sign of left ventricle hypertrophy could be discovered; there was no displacement of the apex, no increase in the area of cardiac dulness, and no murmur or other modification of the sounds could be heard, except a weakness and shortness of the first sound heard at the apex. Thinking the cause of the frequent miscarriages and faintings was probably due to insufficient cardiac power, I determined, should she again become pregnant, to direct my attention to stimulating the heart. In November, 1884, she ceased to menstruate, and I at once prescribed cardiac tonics for her, made her take a certain amount of stimulant, and regulated her exercise and muscular exertions; through the whole of this pregnancy she was entirely free from any fainting or cardiac distress, and, having gone up to the end of the eighth month of gestation, was delivered of a healthy male infant.

CASE III.—Mrs. B., aged 35, gives the following interesting history: Always fairly strong and well, she married at 22, had her first child at full term, about ten months after marriage. Nothing noteworthy occurred in this pregnancy, but about a year later she passed through an acute and prolonged attack of rheumatic fever. From this she recovered without any valvular lesion, apparently, but, as she suffered with shortness of breath on exertion, palpitation and indifferent health, it is probable that the heart did not altogether escape damage. While in this state of health, she became pregnant, but miscarried at the end of the second month; again pregnant, she aborted at the end of the third month. After this she did not become pregnant for a year or more, and meanwhile, under medical treatment, her health greatly improved. In her next pregnancy she went nearly her full term, but had great swelling of the legs in the later months, accompanied by breathlessness on exertion, palpitation, and faintings. Next followed four miscarriages, each terminating about the end of the fourth month, and each accompanied by signs of cardiac failure; then came a considerable rest from child-bearing. Some years later a living child was born at full term, but, in the later months of this pregnancy, dropsy of the lower extremities and of the abdomen, faintings, and dyspnoea were very marked. Soon after this she came under my care, and her health became gradually much improved before she became again pregnant. As soon as she reached the second month of utero-gestation she was put on to iron and digitalis, with occasionally small doses of strychnine, she was made to live on one floor and forbidden going upstairs. All severe muscular exertion was forbidden. Through this pregnancy Mrs. B. passed comfortably, with no oedema of the legs, no fainting, and very little evidence of any cardiac failure.

It would be easy to quote from my notebook many similar cases, which illustrate equally well the relation of an overstrained heart to abortion, but the three just narrated will serve as a sufficient text for my argument. Very little study of the cases just quoted suffices to establish beyond doubt that the heart was on each occa-

sion unequal to its work. Making all allowance for the unstable equilibrium of the nervous system which attends every pregnancy; yet the repeated faintings, the oedema of the lower extremities, the palpitation, the dyspnoea, and other signs all pointed unmistakably to cardiac failure. Again, it is impossible not to connect this failure most intimately with increase in size of the gravid uterus, for the symptoms of heart distress commenced in most cases during the third month (when the heart was beginning to feel an increasing strain), and grew decidedly worse as pregnancy advanced, only ceasing, as a rule, when delivery had supervened and the mother's circulation had returned to its normal condition. That the want of power in the heart's action is due to an absence of the normal compensatory hypertrophy seems almost certain. The actual confirmatory proofs of the *post-mortem* room are fortunately absent, but the feeble, diffuse apex beat, the soft, short first sound at the apex, the character of the sphygmographic tracing, all point to the same conclusion. It is equally clear that the condition of the heart before the onset of pregnancy, and the degree to which the compensatory hypertrophy is absent, will play an important part in determining (1) how soon the signs of cardiac insufficiency will manifest themselves, and (2) how marked those symptoms will be.

Pathological Appearances.—The ova expelled by the uterus in these cases presented a fairly constant appearance; when examined shortly after expulsion they were found to be dotted over with small hæmorrhages, varying in size from a split pea to a threepenny piece, varying too in colour, according as the extravasation of blood had been recent or of some standing. The hæmorrhages had clearly taken place between the wall of the uterus and the membranes; in a few instances large blood clots were found, but usually the hæmorrhages were small in size.

Theory of Abortion.—It is not difficult now to follow out the course of events and see how premature expulsion of the ovum is effected. The first factor in the chain of events is the enfeebled power of the left ventricle; as a result of this the blood stream no longer passes briskly through the small vessels of the periphery, but is driven in a sluggish manner from artery to vein. The inevitable effect of this is, that the walls of the arterioles and capillaries rapidly deteriorate, commence to bulge, and then to leak, and thus blood extravasations are frequently permitted. This process is seen to perfection, if a piece of pia mater or omentum through the vessels of which a sluggish blood current has been passing for some time, is examined under the low power of a microscope: bulging and spoilt vessel walls with small extravasations are seen everywhere. Each small extravasation between the uterine wall and the membranes of the ovum separates the latter partially from the uterus, and when sufficient separation has occurred, the ovum becomes practically a foreign body, and as such is cast off, or in other words abortion occurs. Confirmation of the correctness of this theory, namely, that the ovum is gradually separated from the uterine walls by these small extravasations is afforded by the clinical fact, that small and repeated blood losses *per vaginam* often take place in these cases for many days before final expulsion of the ovum occurs.

Treatment.—If we accept the views propounded as correct, our treatment becomes at once clear. It is briefly to spare the heart as much as possible by maintaining the recumbent posture largely and avoiding any severe muscular exercise, at the same time by good hygiene, liberal diet, stimulants, and cardiac tonics to improve the nutrition of the organ.

In many of our textbooks on midwifery and diseases of women, the term "habit of abortion" is mentioned; the term is essentially a term of ignorance, and we find that as our knowledge becomes more exact, fewer and fewer cases of repeated abortion are referred to this category, other and more scientific explanations being forthcoming. Should the view here put forward to explain the causation of some instances of repeated abortion be deemed a true and scientific explanation, it may serve to rescue some of our hitherto unexplained cases from the unfortunate group referred to, and by making clear the mode in which abortion is brought about, may lead to a satisfactory and successful treatment.

In recognition of professional services rendered to the young King of Spain during his recent serious illness, Dr. Esteban Sánchez de Ocaña has been created a Grandee of Spain, with the title of Count; Dr. Pascual Candela has received the Grand Cross of Charles the Third; and Dr. Agustín that of Isabella the Catholic.