REMARKS ON SPLENECTOMY,

WITH A REPORT OF A SUCCESSFUL CASE.

BY

SIR T. SPENCER WELLS, BART., F.R.C.S.

Received January 25th—Read April 10th, 1888.

THE subject of excision of the spleen does not appear to have been brought before this Society until April, 1886, when two cases of splenectomy formed the subject of a paper by Mr. Knowsley Thornton which is published in vol. lxxix of our 'Transactions.' At the close of that paper Mr. Thornton gives tables of all the cases he could find recorded up to that time. And we learn that there had then been eleven cases of complete splenectomy which were successful, four other successful cases of partial removal of injured spleen, and twenty-four unsuccessful splenectomies. Among the latter were three of my own cases—one, the first in Great Britain, in 1865, the second in 1868, the third in 1876. An account of all these cases may be found in my last work on abdominal tumours, published in 1885. I did not remove an enlarged spleen after the case in 1876 until last year, when I performed the operation which I have now the honour of submitting for the consideration of the Society.

In October, 1885, by desire of Dr. Morley Rooke, of Cheltenham, I first saw an unmarried lady, then twenty-two years of age, on account of an abdominal tumour about the size of a young child's head. The tumour was below the umbilicus, central, elastic, but without fluctuation. Its movements were closely associated with those of the uterus, and its lower border was felt behind and to the left of the uterus. I was doubtful as to the precise seat and character of the tumour, but thought it must be either uterine or ovarian, a very florid complexion rather inclining me towards the former view.

I was informed that since the age of nine years the young lady had been subject to frequent attacks of jaundice, and the mother said that the urine had "always" been very dark in colour. The catamenia appeared rather late—after fourteen—and were at first very irregular. Until after fourteen she was very thin, but then began to grow stout, and her mother soon became uneasy at her being "so large in front." In January, 1882, she had scarlatina very severely, and was long afterwards in delicate health, but did not complain of abdominal pain until after an attack of diarrhoea in August, 1885. It was then that Dr. Rooke first examined the abdomen, and he writes to me that he then "found a distinct pelvic tumour of some sort—central and occupying exactly the position of a uterine fibroid. On vaginal examination, although the tumour could not be felt, yet, with the other hand pressing over the abdomen, distinct impulse was communicated to the cervix." He adds, "I did not use the uterine sound. The growth, when manipulated through the abdominal walls, was not readily movable laterally—presumed size that of a seventh month foetal head. My diagnosis was either an ovarian or a uterine tumour, most probably the latter." As I have just said, I entirely concurred in this view of Dr. Rooke's, and he carefully watched the case without any treatment beyond alkaline diluents. The tumour slowly increased in size, and Dr. Rooke says, "I then resolved to try

ergot, and she took this internally for a considerable period. Under it the growth at one time certainly decreased."

I saw her occasionally at intervals of a few months, and learned that she pursued rather an active life, driving out daily, joining parties of various kinds and dancing, an occasional attack of jaundice being the chief subject of remark. In November, 1886, I found the tumour very much as when I first saw her, and the ergot was discontinued, having been taken eight months. She then went to Italy for the winter, travelled a good deal, but was very easily tired. In January, 1887, in Rome, she over-fatigued herself, working three hours a day, standing in an artist's studio. Then she went through a good deal of fatigue, travelling in Sicily, and afterwards round Naples. On the homeward journey she was treated by Dr. St. Clair Thompson, at Florence, for an attack of peritonitis with very severe abdominal pain, but was able, after a fortnight, to continue her journey. In July, 1887, finding the tumour somewhat increased in size, I agreed with Dr. Rooke that she should take ergot again. This was continued for six weeks. By this time she had become anxious to have the tumour removed, but we thought the suffering hardly sufficient to justify so serious a risk, as she was able to enjoy driving and ordinary amusements. In August and September, 1887, she had a severe attack of jaundice with much abdominal pain. In October, when at Cambridge, Dr. Latham attended her in another attack. I was told that her skin was then "quite copper-coloured," and Dr. Latham wrote to me that the illness "was marked by sudden and intense discolouration of the skin and conjunctivæ, extremely dark urine, obstinate constipation, and the same severe abdominal pain which had accompanied the previous attack." From about this time a considerable change was observed in the tumour. It rose from the pelvis, increased in size, was more mobile, and fluctuation became more perceptible in or around it; and she was suffering

so much, not only from the pressure of the tumour, but in her general health, that I quite agreed with Dr. Latham in advising that the tumour should be removed. I wrote to Dr. Rooke to this effect, advising that if the suffering continued, operation should not be long delayed; and Dr. Rooke, finding the changes that Dr. Latham and I had observed, fully concurred in our opinion and advice.

Accordingly the patient came to London, and I operated on December 5th, 1887.

All the usual antiseptic precautions were adopted, including phenol spray. Dr. Day administered bichloride of methylene, and I was assisted by Mr. Meredith and Dr. Rooke, Dr. Headley, of Melbourne, being the only visitor. The incision was made in the median line, between the umbilicus and symphysis pubis. As soon as the peritoneum was opened, about two or three pints of ascitic fluid escaped, and the spleen was seen at once. Passing one hand around it, I felt that the uterus and both ovaries were of normal size, and that the spleen was movable. I enlarged the incision until it extended from one inch above to about five inches below, the umbilicus. On attempting to press out the spleen with one hand passed behind it, an accidental rupture was followed by very free bleeding. The substance of the enlarged organ was very soft and friable, so I brought it out as soon as possible, and put two pressure forceps of large size on the connection between the spleen and the gastro-splenic omentum, which was unusually fatty and long, and contained very large blood-vessels, also much elongated. Transfixing twice behind the forceps, each needle with a double ligature, the connection or pedicle was tied in four parts. The pressure forceps were then removed. One ligature was applied behind the four, securing the whole of the pedicle, and a second ligature was applied as additional security upon the largest vessel. The peritoneal cavity was then carefully cleansed by sponging. A good deal of blood was lost; but it was venous or very dark, and appeared rather to come from the substance of

the spleen than from the general circulation. The cheeks and lips never lost their florid colour, nor did the pulse become weak.

The wound was closed by silk sutures, as in ovariectomy, and the abdomen supported by plaster, salicylic wool, and a flannel belt.

Mr. Eve examined the tumour at the College of Surgeons the same afternoon, and reported it weighed 1 lb. 14 oz. This was after much blood (variously estimated at from 3 lbs. to 5 lbs., but not measured) had drained out of it. The blood contained an excess of white corpuscles, but not to a remarkable amount. Mr. Eve had not the necessary instrument for making an exact estimate.

There is not much to remark on the progress after operation, except that until the catamenia commenced on the fourth day there was high temperature, flushed face and forehead, very scanty urine, and dry skin. I should have stated that the operation was performed about a week after the non-appearance of an expected menstrual period. I proposed delay, but was assured that whenever she had missed a period before it had not appeared until the next was due, and three weeks' delay was more than she could safely bear. Before the operation the temperature was normal. It rose within eight hours to 101° , the next day to 102.6° , the second day to 103.6° , in spite of an ice-cap to the head, and remained between 101.0 and 102.4° , with a pulse of 120 to 128, until the evening of the fourth day, when menstruation came on. This was soon followed by falling temperature and slower pulse. After the fifth day the temperature was almost normal and the pulse about 80. The urine became more copious and the skin moist. Neither sickness nor pain had ever been troublesome. The stitches were removed on the seventh day, when the wound was perfectly united by first intention, without a drop of moisture from any of the stitch points. She left London twenty-four days after operation and bore the journey to Cheltenham perfectly

well. Writing to me on the 13th of January, 1888, Dr. Rooke said, "Since her return home she has continued to improve, is driven in an open carriage, walks about the house, eats and sleeps well, retains her vivid colour, and so far seems to do better without a spleen than with one. There is no appearance of jaundice. I question whether she has, for many years past, been six weeks without an icteric tinge."

A little consideration of Mr. Thornton's tables is sufficient to prove that the results of splenectomy vary very much with the conditions which have led to the operation,—that it is very successful in cases of partial removal for injury, less so in cases of wandering spleen and of splenic cysts, still less so in cases of hypertrophy, and is very unsuccessful when the hypertrophy is associated with leucæmia.

In the fifth volume of the 'Transactions of the American Surgical Association,' published at Philadelphia in 1887, there is a paper by Dr. McCann, of Pittsburg, on "Splenectomy for Dislocated or Wandering Spleen." He records a successful case in a married woman, twenty-nine years of age. The spleen was in the left iliac region and "extended into the pelvic cavity. It was removed in May, 1886, and weighed fourteen ounces, after a quantity of blood had been allowed to escape from it." "The patient's blood contained more than the normal number of white blood-corpuscles, but the number was not sufficient to constitute leucæmia." The patient recovered, became pregnant five or six months after operation, and when the paper was read or published, she was in the eighth month of pregnancy and had "been able to perform without discomfort all the duties incumbent upon a farmer's wife."

From a comparison of different compilations of published cases, Dr. McCann concludes that complete excision of the spleen for all causes has "been performed fifty-two times, with a mortality of 62·8 per cent. But while in sixteen cases where hypertrophy of the spleen was

associated with leucæmia every patient died, thirteen operations gave eight recoveries where the spleen was excised for injury, for hypertrophy uncomplicated with leucæmia, or for dislocated or wandering spleen."

In the thirty-sixth volume of Langenbeck's 'Archiv' there is a very learned and valuable paper by Professor Adelman, on the progress of splenectomy in thirty years. He has arranged in a table twenty-five cases of recovery where the healthy spleen has been removed, it having escaped from the abdominal cavity after wounds or accidents of various kinds. He does not attempt to tabulate fatal cases, as he very justly says such cases are seldom recorded. Some of these twenty-five successful cases prove that life may be prolonged and good health enjoyed for many years after the loss of the spleen. In another table he gives particulars of fifty-four cases of splenectomy where the spleen was enlarged or diseased, bringing the record down to June, 1887. He corrects many errors in the tables previously published, and with some doubtful exceptions concludes that the operations recorded before 1848 were performed without any anæsthetic, and most of those before 1875 without anti-septic precautions. He shows that of the fifty-three patients, only eleven were males to forty-two females. The ages varied from ten to sixty-three years, but age alone did not appear to have any great influence on the result. The nature of the disease is far more important, as shown by the following table:

Disease.	No. of cases.	Recoveries.	Deaths.
Hypertrophy with leucæmia . . .	19	1	18
Simple hypertrophy . . .	14	1	13
Malarial hypertrophy . . .	4	1	3
Wandering spleen . . .	9	7	2
Splenic cysts . . .	4	3	1
„ hydatid . . .	1	1	0
„ sarcoma . . .	1	1	0
„ suppuration . . .	1	1	0
	<hr/> 53	<hr/> 16	<hr/> 37

It might appear from this table that the result of splenectomy for simple or malarial hypertrophy, and especially where the enlargement is associated with leucæmia, is so disastrous that the operation should be generally discouraged. But when we examine into the causes of the great mortality, it is almost certain that more extended experience, and more attention to the manner of securing blood-vessels, may be expected to lead to much greater success.

One question of great practical importance was raised by Langenbeck. He suggested that the splenic artery should be tied as close to the cœliac axis as possible, before it divides into its numerous branches. But even if this could often be done without much disturbance of the pancreas, it must be very doubtful whether a ligature applied close to the cœliac axis in a patient whose blood is in a condition where a firm blood-clot can hardly be expected, can be trusted not to slip and lead to fatal secondary hæmorrhage. From my own experience and study of many of the records of operations by other surgeons, I am inclined to follow and recommend the opposite practice, temporarily securing all the blood-vessels by pressure forceps as near to the spleen as possible, then removing the enlarged organ, afterwards applying silk ligatures by transfixion behind the forceps, and tightening them as the forceps are removed. All the ends of the silk should be cut off near the knots. If the peritoneal cavity is carefully cleansed, there can be no necessity for drainage, and the wound in the abdominal wall should be closed as in ovariectomy.

It may still be open to question whether splenectomy should be advised in cases of simple or hydatid splenic cysts. So far as one perfectly successful case which I treated in association with Sir William Jenner, by tapping and drainage, can guide us, I should be disposed to advise a trial of the simpler process before resorting to the graver operation.

When the spleen is hypertrophied, the danger of

removal is certainly less when the organ is also misplaced or "wandering" and its attachments lengthened. And it is probable that a spleen simply hypertrophied without leucæmia may be removed with less risk than when leucæmia is present. It is also probable that the amount of the leucæmia, or the larger or smaller proportion of white to red corpuscles in the blood, may have a considerable influence upon the amount of blood lost during the operation and upon the liability to secondary hæmorrhage, and thus affect the result.

It must also be admitted that under very different conditions of the patients the results of splenectomy have gone on improving during the last thirty years, and that with increasing knowledge and more practical experience, still greater success may be reasonably hoped for. And sufficient facts have already been accumulated to prove that patients who recover from the operation may live for many years in good health without a spleen.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' New Series, vol. ii, p. 368.)