REMARKS

ON

THE MORTALITY OF THE VARIOUS OPERATIONS FOR THE REMOVAL OF VESICAL CALCULUS, ESPECIALLY IN CHILDREN.¹

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In the BRITISH MEDICAL JOURNAL of May 5th, 1894, I published statistics showing the mortality of the various operations performed for vesical calculus in young subjects, taken from the records of several hospitals. The main result of these was to show a remarkably high death-rate from suprapubic lithotomy. As I practise the suprapubic section with some frequency, I felt interested to know what results it gave in adults, and whether it would compare favourably with perineal lithotomy and litholapaxy. No absolute comparison can be drawn between these various operations, because practically all large stones are now removed by the high section, thus throwing upon it a greater rate of mortality than would be the case if it were the routine operation, and not one for selected cases.

The period covered by my statistics is five years, from 1888 to 1892 inclusive, and they are from the records of six metropolitan and seven provincial hospitals, the majority being medical schools. It would have been unfair to have gone back to an earlier period than that selected, as the high operation was then, so to put it, on probation.

The following is the result of my investigation :

Litholapaxy.

No. of Cases.	Recovered.	Died.	Under 10 Years.		Under 20 Years.		Under 30 Years.		Under 40 Years.		Under 50 Years.		Under 60 Years.		Under 70 Years.		Over 70 Years.	
			R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.
300	276	24	43	1	17	0	24	3	25	1	19	5	41	3	74	7	33	4

Suprapubic Lithotomy.

No. of Cases.	Recovered.	Died.	Under 10 Years.		Under 20 Years.		Under 30 Years.		Under 40 Years.		Under 50 Years.		Under 60 Years.		Under 70 Years.		Over 70 Years.	
			R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.
169	143	26	46	10	33	5	9	1	6	0	11	0	20	2	12	4	6	4

Lateral Lithotomy.

No. of Cases.	Recovered.	Died.	Under 10 Years.		Under 20 Years.		Under 30 Years.		Under 40 Years.		Under 50 Years.		Under 60 Years.		Under 70 Years.		Over 70 Years.	
			R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.
96	91	5	48	2	16	0	7	0	3	0	4	0	9	2	4	1	—	—

¹ Read at the Birmingham and Midland Counties Branch of the British Medical Association on December 13th, 1894.

Median Lithotomy.

No. of Cases.	Recovered.	Died.	Under 10 Years.		Under 20 Years.		Under 30 Years.		Under 40 Years.		Under 50 Years.		Under 60 Years.		Under 70 Years.		Over 70 Years.	
			R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.	R.	D.
48	42	6	15	1	7	0	5	2	5	1	2	0	3	1	5	1	—	—

By a glance at the tables the proportion of deaths following the various operations will be seen, as also the mortality at various ages. Summed up the results are these:

Litholapaxy: 300 cases, 24 deaths=1 in 12.5=a mortality of 8 per cent.

Suprapubic lithotomy: 169 cases, 26 deaths=1 in 6.5=a mortality of 15.4 per cent.

Lateral lithotomy: 96 cases, 5 deaths=1 in 19.2=a mortality of 5.2 per cent.

Median lithotomy: 48 cases, 6 deaths=1 in 8=a mortality of 12.5 per cent. Adding these together we get a total number of cases 613, deaths 61=1 in 10=a mortality of 10 per cent. on the series.

A few comments are necessary. Litholapaxy deals with the most favourable cases of stone, namely, those in which the calculus is of small or moderate size, and its best results are shown under the age of 20 and above 50.

The suprapubic mortality is considerable. This is not surprising in old people, who bear any cutting operation badly, and should therefore as far as possible be reserved for crushing. But in children the death-rate is so considerable as to call for careful consideration. Later I propose to contrast the mortality of modern operations for stone with that obtained when only one operation, the lateral, was practised, when I shall have some further comments to make on the death-rate in children after the high section.

It should be noted, with regard to the general mortality after suprapubic section, that 4 deaths were not directly due to it but rather to some antecedent proceeding. In 3 of the cases lithotrity and in 1 case lateral lithotomy had been attempted, and failing, the high operation was immediately performed, 3 of the patients dying of shock. This leaves 22 deaths to be accounted for: 7 are ascribed to various inflammatory and degenerative changes in the kidneys, 3 to peritonitis, 2 to shock, 2 to septicæmia, 1 each to cellulitis, bronchitis, pneumonia, scarlet fever, secondary hæmorrhage, and exhaustion; in 2 no cause is given.

The deaths due to dilative and infective changes in the kidneys are numerous, as was to be expected from the fact that many of the patients were reserved for this particular operation owing to their age and the size of the stone.

In 2 of the deaths from peritonitis there is no explanation given, nor is there of the 1 case in which urinary infiltration occurred; the third case of peritonitis was due to injury of the rectum by the Petersen's bag. The two special dangers ascribed to the high operation, peritonitis and urinary infiltration, seem to me from my own experience to be overestimated. In 24 cases in which I have operated by this method, in no case has peritonitis ensued, the peritoneal reflection in all being pushed out of the way if seen, nor has there been any case of infiltration of urine.

I now propose to contrast the mortality of modern operations for stone with that which prevailed when only lateral lithotomy was practised. In an Appendix to his Introduction to the Catalogue of the Collection of Calculi of the Bladder in the College of Surgeons Museum Sir Henry Thompson gives an analysis of stone cases, all operated on by lateral lithotomy in various metropolitan and provincial hospitals between 1790 and 1840. The total number of Thompson's cases was 1,827, the deaths were 229, the rate of mortality being therefore 12.5 per cent. With this may be contrasted the death-rate from the various operations 1888 to 1892: Number of cases 613, deaths 61, mortality 10 per cent.—a reduction of 2.5 per cent. as compared with the previous period. It is at first sight disappointing to find that the reduction in mortality is not greater, but the figures in detail show that in Thompson's tables the majority of the patients were considerably younger than those collected in mine. Doubtless in those early days many elderly patients

were advised to endure their suffering rather than face the risk of lateral lithotomy—then the only resource—and this must affect the comparative mortality. I should like to have compared each decennial period of Thompson's cases with my own to show the mortality at different ages, but this is not possible from the way in which his statistics are compiled. Nevertheless, some further comparison is possible and of value.

Thompson's Tables. (Operations from 1790 to 1840.)

Age 1 to 11 inclusive	850 cases, 49 deaths, 1 in 17= 6.0 per cent. mortality.
" 1 to 48	1,365 " 114 " 1 in 12= 8.3 " "
" 49 and upwards	462 " 115 " 1 in 4=25.0 " "
At all ages	1,827 " 229 " 1 in 8=12.5 " "

My own Tables. (Operations from 1888 to 1892.)

Age under 10	166 cases, 14 deaths, 1 in 11.9= 8.4 per cent. mortality.
" 50	377 " 32 " 1 in 11.8= 8.4 " "
" 50 and upwards	236 " 29 " 1 in 8.0=12.5 " "
At all ages	613 " 61 " 1 in 10.0=10.0 " "

Comparison of these figures emphasises what I have already pointed out, namely, that the general mortality of stone operations is reduced. It shows further that the reduction is due to the greater safety with which operations are now performed after 50 years of age; but it appears to show also unmistakably that operations for stone in children are attended with a greater mortality than they were fifty years ago. This, if it be true—and I have endeavoured to avoid putting any unfair construction on the figures—can only be due to the introduction of lithotripsy and suprapubic section. Reference to the first tables shows that to the latter the enhanced mortality must be ascribed.

This further inquiry therefore confirms the opinion I expressed in my former paper already referred to that lateral lithotomy and litholapaxy are safer operations in children than the suprapubic is at present, and that if the last-mentioned is to be adopted as a routine procedure in the future, it must be shown that it gives better results than it does now.

To return for a moment to the mortality of suprapubic section in adults. I can only speak of general impressions gathered from the statistics and from my own operations. So far as these go, they leave no doubt in my mind that where a cutting operation has to be performed on an elderly person, say above 50, suprapubic section is safer than perineal, but it should be resorted to only when lithotripsy is for any reason unadvisable. In the middle period of life, although I personally prefer to perform litholapaxy, I believe the mortality of the three operations is very similar. I have not seen a permanent urinary fistula left after any suprapubic section, but in three cases operated upon by me in private practice, all men with marked prostatic enlargement, the length of time before sound healing was secured was protracted to months, in one to seven months, to the patient's and my own considerable annoyance. Removal of prostatic tissue in these cases was forbidden by the patients' general condition.

THE TREATMENT OF CHRONIC AFFECTIONS OF THE HEART BY BATHS AND EXERCISES

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THE PHYSICAL TREATMENT OF AFFECTIONS OF THE HEART. ALTHOUGH the Schott methods of treating affections of the heart were brought under the notice of the medical profession in England in 1891,¹ it is only within the present year that they have attracted even a small share of the attention which, as therapeutic agents of the first order of efficiency, they unquestionably deserve. The brief account of the system in question which I published in the early part of the present year,² and the paper from the pen of Dr. Wethered which recently appeared in the BRITISH MEDICAL JOURNAL, have at length attracted so much attention that further information on the subject may possibly be read with interest.

In the Hunterian Oration of last year Dr. Lauder Brunton assigned to the system under consideration a place

intermediate between massage as applied to those who are confined to bed, on the one hand, and graduated walking exercise, as practised in the Terrain cure, on the other. Such a general classification would not be intended to have the force of a precise definition; and I hope to be able to show that while in skilful and experienced hands massage, combined with rest, may be of great value in the treatment of certain conditions of the heart, the Schott methods are equally applicable to the same conditions either by themselves or in conjunction with massage, while graduated walking falls into place as their rational complement.

The system consists of two methods of treatment—that by baths, and that by remedial exercises or movements. Broadly speaking, the immediate effect on the heart and blood vessels of immersion in water, whether holding in solution a number of mineral and gaseous constituents or relatively pure, depends on the temperature of that medium; and it may at once be stated that the range which is available for the therapeutic purposes in question lies between 85° and 96° F. The effect of the immersion is at once to increase the volume and diminish the rate of the pulse; and that the difference between the primary effects of a comparatively pure and a strongly mineral water is not considerable will be shown by the comparison of observations made on myself in connection with immersions of ten minutes' duration in three different waters, each of which was of the temperature of 90° F. In the first instance the bath consisted of London water as provided for public consumption, in the second of the water of Llangammarch Wells, in Breconshire, which, in addition to 0.09 parts of chloride of barium, contains 2.7 of chloride of sodium and 1.2 of chloride of calcium per 1,000. In the third instance the water was that of the Nauheim Spring No. 7, freed from the greater part of its natural carbonic acid, and containing close on 22 parts of chloride of sodium and about 1.7 of chloride of calcium per 1,000. It will be observed that in each instance there was an immediate diminution of the pulse-rate which, proportionally to the rate observed before immersion, can scarcely be said to differ, and that during the latter half of the immersion there was a slight advance on the lowest rate attained. Further, it should be stated that in each case there was a marked increase in the volume of the pulse as tested by the finger.

The following are the pulse rates:

	London Water.	Llangammarch Water.	Nauheim Water.
Before immersion (standing)...	88	96	84
Within 1 minute	71	80	72
At the 2nd "	76	69	64
At the 4th "	68	73	64
At the 6th "	64	70	68
At the 8th "	68	74	70
At the 10th "	64	77	70
After dressing (standing)	88	88	80

Here ends the similarity of effect of immersion in plain and mineral waters as far as my own experience goes. During the last two or three minutes the bath of plain water conveyed a sense of cold, which was only afterwards relieved by vigorous towelling, and was followed by no perceptible sense of exhilaration or invigoration. The mineral baths, on the contrary, induced a glow of warmth and a sense of exhilaration and invigoration which, within certain limits, were proportionate in degree and duration to the salinity of the water employed. Moreover, the influence exercised on the rate and volume of the pulse in the case of plain water is so transitory that it may be regarded as merely temporary, and presumably would not be cumulative in the event of repeated daily immersions being employed, as it undoubtedly is with baths more or less saline in constitution. It may, therefore, be correct to say that, in respect of therapeutic influence on a disabled heart and an impaired circulation, fresh water baths may be dismissed from consideration.

Mineral baths, therefore, whether endowed by Nature or by artificial means with suitable ingredients, may be said to produce the following immediate and rapidly-ensuing results:—a marked diminution of the rate of the pulse, an equally notable increase in its volume and force, a glow of warmth extending to the extremities and imparting to them a heightened colour, and an enduring sense of refreshment and invigoration. No less obvious are the influences they exercise on the respiration and on the size of the heart.

¹ Reprint, *The Treatment of Chronic Diseases of the Heart.* By Th. Schott, M.D. Eyre, Spottiswoode, and Co.

² *The Treatment of Chronic Diseases of the Heart by Baths and Exercises.* By W. Bezly Thorne, M.D. J. and A. Churchill.