number of ounces on the four successive days in two cases in which the salt solution was used and in two cases in which it was not used. In the latter two the foot of the bed was not elevated, but the patients received the customary rectal injection of salt solution and coffee at the close of the operation.

TWENTY-FOUR-HOUR AMOUNT OF URINE, IN OUNCES.

	Salt Sol. Used.		Salt Sol. not Used.	
	Case 1.	Case 2.	Case 1.	Case 2.
First day	63	41	25	17
Second day	38	62	24	18
Third day	40	47	26	31
Fourth day	33	33	30	26

As a scanty secretion of urine following abdominal operations has long been a well-known phenomenon, and as this has been thought to indicate a deficient elimination of waste products, the effect of the salt solution on the amount of urinary secretion must be considered beneficial.

It was my custom in the first cases on which the postural method of drainage was used to keep the foot of the bed elevated for twenty-four hours only; but after noting that several of the patients complained of pain in the flanks and had a more rapid pulse as soon as the bed was lowered, I adopted thirty-six hours as the proper time for the elevation of the bed, and have since found this time generally satisfactory. I am inclined to believe that the discomfort referred to may be in part, at least, avoided by lowering the foot of the bed gradually, that is, after twenty-four hours let it down half-way, and then lower it entirely at the end of thirty-six hours.

The relief of thirst is quite noticeable after the use of salt solution.

With the foot of the bed raised eighteen inches there is a tendency for the patient to slide towards the head of the bed, and some patients complain of the discomfort attending this sliding. In this position of the body there is some difficulty in swallowing, but this difficulty is overcome by the patient's swallowing slowly. On the other hand, vomiting is much easier in this position. The nurses say that there is less nausea when the bed is elevated; and this opinion coincides with my observation, although I have known of two or three patients with whom the nausea seemed to be exaggerated by the position, notably a patient of one of my colleagues, who was violently nauseated on the night of the day following the operation, and the nausea was entirely relieved by lowering the bed.

In one or two fat women with abdominal distention we have noted embarrassment of the respiration. Distention is much less frequent, and this is probably due, in large measure, to the absence of interference with the intestines by the gauze drain.

Very few patients are able to urinate voluntarily during the first twenty-four hours after an abdominal operation, whether the foot of the bed is elevated or not. With the bed elevated the catheter must be used, unless, as is often done at St. Elizabeth's, both for urination and for the expulsion of enemata, the bed is lowered temporarily.

Patients experience no flushing of the face or headache as a result of the lowered head. They have little or no backache, in marked contrast to the amount of pain suffered after most abdominal operations when the bed is flat. There is less abdominal pain where the postural method is used. This immunity from pain I have thought can be attributed to the freedom of the

pelvis from stagnating fluids, for, in the past I have observed that the post-operation abdominal pain was less, the cleaner and freer from oozing the pelvis was left at the close of the operation.

Elevating the foot of the bed has long been considered one of the valuable means of combating surgical shock; the employment of salt solution freely in the rectum and under the breasts has added to our resources; and now if we put hot salt solution in the peritoneal cavity and elevate the bed, we are not only assisting the peritoneum to rid itself of harmful fluids and micro-organisms, but stimulating the vital centres, washing out the kidneys and giving the blood sufficient volume to make good any loss.

On the whole, I think that the results of the postural method of draining the peritoneal cavity following abdominal operations warrant us in saying that the employment of this procedure marks a distinct advance in abdominal surgery.

A CASE OF ASTHENIC BULBAR PARALYSIS.¹

BY JAMES L. WHEATON, JR., M.D. (HARV.), PAWTUCKET, R. I.

THE history of the case up to the time of the first medical attendance and the course and special symptoms since are as follows:

Miss A., thirty-three years old, was a school-teacher by occupation. Her father died of heart disease, and her mother of tuberculosis of the lungs. She had a brother and sister who are both living and well. She had never been strong or rugged, but was always delicate, bordering continually on ill-health, and of a very nervous disposition. Menstruation began at fourteen and had always been very profuse, but quite regular. She had had most of the children's diseases, but had never had other severe disease. She had always been a hard student, and was a constant reader. During the last year, she had worked very hard at her school. She held a position in one of the public schools; and as she took a great interest in her work and was ever ready to do whatever extra work she was asked to do, her superior placed upon her a great amount of work. To accomplish this, she would sit up until one and two o'clock at night and arise early in the morning, and sometimes even going without her meals in order to get a certain amount of work done. By the time school closed in the spring she was tired out and very nervous. She could not sleep and was very excitable. About the second week in July, 1896, she went to the dentist and had a tooth extracted. There was some trouble about it; and for some reason, the dentist told her that she must be very careful or her gum would start to bleed and she might bleed to death. This frightened and worried her greatly, and she became even more excitable and nervous. On the night of the 21st of July she had a severe headache, and in the morning she found she could raise her eyelids with difficulty and that the light pained her eyes very much.

I was called to see her on the 22d of July, 1896. I found her condition as follows: She was of average height, delicately built, not very strong muscularly and with a very slight development of fat. She could move about the room readily and was not confined to her bed. Her face was pale and thin, but with a good intelligent expression. The skin on her

¹ Read before the Rhode Island Medical Society, December 2, 1897.

neck and arms, pale or slightly anemic. There was no eruption, no edema and no scars to be seen. There was a slight moisture. The temperature appeared normal. The pulse was weak, soft and beating 90 per minute. The condition of the arteries was good. Respiration was normal, both in type and frequency. The most striking symptoms were the dropping of the eyelids, the inflamed appearance of the eyes and the general nervous condition of the patient. She complained mostly of her inability to keep her eyelids raised, of the pain which the light caused, and of a dull pain across the top of her head.

On closer examination, the lungs were found to be normal. Inspection, percussion and auscultation showed that the heart was normal. The tongue was protruded quickly and straight, and was not coated. The appetite was fairly good. No great thirst, no vomiting and no diarrhea. Upon palpation and percussion, the liver, spleen and stomach appeared normal, and there was no evidence of new growths or disease in the abdomen. The urine proved to be normal on examination.

In regard to the nervous system: There were no abnormal involuntary movements of the muscles. There was no difference noted on the two sides of the face. The movements and appearance of the lips and nose were normal. The pupils were alike. She could wrinkle her forehead, pucker her lips, laugh, blow out her cheeks and stick out her tongue, moving it from side to side. The movements of her eyes were good. She could, however, raise her eyelids with difficulty. Her mouth and pharynx appeared normal, and she could speak distinctly. She held her head and neck in a good position and without difficulty. There was complete control of the movements of her arms and legs. She had complete control of her bladder and rectum. She could write without difficulty. The sensitiveness of the skin appeared normal to the needle and to warmth and cold. Her muscular sense was good, as well as her senses of hearing, smelling and tasting. Her reflexes were slightly increased.

During the next few days, she grew rapidly worse. It became almost impossible for her to raise her eyelids. She began to have double vision, and she experienced some difficulty in chewing her food, and in keeping her mouth closed. She was unable to sleep. She would occasionally have attacks of palpitation.

August 14th, she complained of difficulty of walking. She appeared on walking to balance her body on her hips, after the same fashion that a juggler balances a feather on his nose.

Up to the 2d of August, she had been able to get down stairs and lie on the lounge during the day. After this date, she remained in bed, being too weak to walk even a few steps. The muscles of her neck gave out, and she could keep her head erect for a short time only.

On August 14th, menstruation began, and all her symptoms increased in severity. This lasted for six days and was quite profuse. She began about this time to have difficulty in swallowing.

On August 31st, she had quite a severe choking spell, apparently some food had found its way into the larynx.

On September 7th, she had a very bad spell of difficulty in breathing. It lasted some fifteen minutes. She had another on the 11th.

On the 14th, I was called to the house in a great hurry. I found she had had another attack of difficulty in breathing, just as she was being raised to take some nourishment, and that while held in this upright position she had suddenly ceased to breathe. Her heart was just fluttering when I arrived. This lasted but a minute or two. She had died from a paralysis of the muscles of respiration.

The foregoing data are a few landmarks of the disease, showing merely an outline of its course. The other important symptoms appeared so gradually that no exact date could be given of their appearance or disappearance; and of these latter I will speak now more at length. First, in regard to her nervous symptoms. Her mind remained clear during the whole course of the disease. She was for the greater part of the time despondent, looking at the worst side of her case. She was very fretful, continually asking something to be done for her and never satisfied when it was done. She slept very little, averaging only two or three hours in the twenty-four. About once every week she would have an attack of severe pain in her head, and usually after the attack her symptoms would increase in severity. Her reflexes increased gradually during the disease. During the latter half, upon striking the patella-tendon, you would get not only a twitch of that leg, but even a greater one of the other leg. The paralysis seemed to begin with her eyelids and then work downwards. It did not, however, at any time appear to be a true paralysis. It seemed rather that the muscles were tired out, and with rest they could perform their functions once more. As evidence of this is the fact that the *continued* paralysis appeared only in those muscles which were obliged to be used constantly, such as the eyelids, the muscles of the eyes, the muscles of mastication and deglutition. There was also the fact that although there appeared no evidence of paralysis in the muscles of the extremities with the ordinary movements, yet when you called upon her to do certain movements for some time, they would be done rightly at first, but would grow gradually weaker, until at last they could not be done at all. This was seen in walking upstairs. She could go up two or three steps all right, but then she would begin to have difficulty, and before reaching the top would give out completely. In walking on the level, she would go half-way across the room all right, then the muscles keeping her body erect would gradually give out, and she would have the balancing appearance, which I spoke of above. Swallowing was also an evidence of this. She could swallow three or four times well, then she gradually lost power, and she would have to rest some time before attempting it again. After two or three hours' rest, all her symptoms would be better. She could open her eyes wide. She could close her mouth, and she could swallow without difficulty. This apparent paralysis would vary in severity from day to day. She would go sometimes one or two days with but little difficulty with any of her muscular functions. Upon my morning call on the day she died, I found her in the best condition since she had taken to her bed. She could open her eyes wide, she could swallow well and breathed without difficulty. During her sickness she did not lose much weight. Her muscles did not atrophy. The muscles of her tongue did not atrophy; there were no furrows or depressions; and the individual fasciculi exhibited no active fibrillary contractions. The lips did not atrophy, neither did

they grow thin and wrinkled. Her temperature at no time went above 101°, and for the greater part was normal. The pulse-rate never exceeded 120 per minute and was generally between 90 and 110. She experienced very little pain, other than in her head. Her appetite remained good all the time. She never had any gastric troubles and her bowels were always regular. No time did she lose control of her bladder or rectum. No eruption appeared on her skin at any time.

After watching the case carefully for some time, the complexity of the symptoms gave me great doubts as to the diagnosis. I asked Dr. Gorton to see the case with me, which he kindly did. After going over the case thoroughly we came to the conclusion that it was a case of asthenic bulbar paralysis. The reasons for this conclusion were as follows:

From the fact that her organs of respiration, circulation and digestion gave no evidence of disease, we are brought directly to the nervous system as the location of her trouble. The ptosis, the disturbance in the functions of speech, of mastication and of deglutition give evidence of trouble in the neighborhood of the bulbar processes, while the continued clearness of the intellect, the lack of characteristic pain, of hemiplegia and other symptoms of cerebral disease lead us to confine our thoughts almost entirely to the different diseases of the structures at the base of the brain.

Acute and apoplectic bulbar paralysis, due either to hemorrhage into the medulla oblongata and the pons or to embolism and thrombosis of the basilar artery, is more sudden in its appearance, and the duration of the disease is either but a few days, or, if it does continue, there exists a crossed hemiplegia. Then, too, acute or inflammatory bulbar paralysis is more sudden in its appearance and but a few days brings it to a fatal termination. Compression of the medulla, by new growths and the like, differ from the case in hand, in that when the medulla is compressed there are initial symptoms of irritation and a greater complexity of clinical phenomena, like sensory lesions and hemiplegia, and an asymmetry of certain symptoms.

Now let us consider progressive bulbar paralysis, which belongs to the group with progressive muscular atrophy, and amyotrophic lateral sclerosis, the last two differing from the first in the location of their lesion rather than in the lesion itself. In progressive bulbar paralysis the symptoms are very slow in development. There are mild premonitory symptoms, such as painful sensations in the back of the neck. Then, too, it is exceedingly rare to find ptosis at first or at any time during the disease. Disturbance in the utterance of the letters in which the tongue plays an essential part is the first thing generally noticeable. The tongue atrophies and becomes flabby and thin, furrows and depressions come upon it, and often the individual fasciculi show active fibrillary contractions. None of these phenomena are seen in our case. At the same time with the change in the tongue, changes are taking place in the muscles about it. The lips become thin and stiff and are unable to be puckered so as to whistle. The muscles of mastication give out, and the jaw drops, which, added to the impairment of movement in the muscles supplied by the lower half of the facial, give to the expression a persistent lachrymose character. Then comes the trouble with the muscles of the pharynx and larynx, and great impairment in swallowing is produced, and the liquid ingesta are re-

gurgitated through the nose, and the production of many sounds as *B* and *P* is impossible. Although we have in our case the difficulty in mastication and deglutition, yet it differs from the condition seen in progressive bulbar paralysis, in that in the latter, when the paralysis comes on, it is persistent, while in our case at any time with a little rest the muscles would do their work well for a short time. This characteristic holds good in all the affected muscles. It is not a true paralysis, as you find in progressive bulbar paralysis, progressive muscular atrophy and amyotrophic lateral sclerosis, but rather a tiring of muscles which rest restores to their normal condition. Then, too, you do not see in our case, as in the other three diseases mentioned above, an atrophy of the muscles. They remained about the same throughout the whole course of the disease. This weariness of the muscles was not confined to the muscles supplied by the basilar nuclei, but existed all over the body. It was a general condition, but was noticeable more in those muscles which kept continually in active service. It was due to this continued use that the paralysis seemed real in the case of the ptosis, the muscles of the eyes and of mastication. Could they have been put at perfect rest, they would have acted like the other muscles. So much for the motor symptoms. The reflexes show a difference. In progressive bulbar paralysis the reflexes are greatly diminished or even absent, while in our case the reflexes are greatly increased. Our patient's pulse never went above 120, while in the other diseases it reaches as high as 160 per minute. Progressive bulbar paralysis lasts several years, from two to five, while the duration in our case was not quite three months.

The diagnosis becomes harder when we consider pseudo-bulbar paralysis or glosso-labio pharyngea. This disease differs from progressive bulbar paralysis and simulates our case in the more sudden mode of onset, in the frequent remissions, and the fact that the muscles do not atrophy; yet it differs from both in its longer duration, its asymmetry of the paralysis, which is especially seen in the orbicularis oris, and in the fact that although there are remissions in the disease, yet they are not of the same character as in the case before us; that is to say, while the attack is on, there is a true paralysis, and no amount of rest will bring it back into condition. In this case, however, the remissions are of very short duration and are brought about by rest. Then, too, no cause for such disease could be found in the condition of the arteries or heart.

If we cannot place our case in any of the preceding groups of disease, where will we place it? We must find a class of cases which have as their characteristics a functional disturbance of the whole muscular system, which disturbance is apparently a tiring of the muscles by use, and which can be restored in some degree by rest, and a disturbance not accompanied by atrophy of the muscles. Up to the present time, only twenty cases of such a nature have been reported. Erb, in May, 1878, reported three cases, but it remained to Oppenheim to put forth the first exact description. Since then, cases have been reported by Eisenlohr, Wilks, Shaw, Goldham, Senator, Hoppe, Remark, Strümpell, Jolly, Pineles, Mayer, Charcot and Marinesco, and Fajertajn. In all making twenty cases. Oppenheim, from the fact that it was so like progressive bulbar paralysis, yet upon autopsy no pathological changes could be seen, gave to the class the name of

"bulbarparalyse ohne anatomischen befund." This appellation did not give any suggestion of the characteristic muscular phenomena. Strümpell, to overcome this, called it asthenische bulbarparalyse, or asthenic bulbar paralysis. In Jolly's investigation into his cases, he found that the cause for the muscular disturbance lay for the most part in the muscles themselves, for unlike normal muscles when stimulated directly by the electrical current, the tonic contractions would last but a short time and the muscles becoming soon tired out, relaxed, even while the current was being applied, showing, as he says, some change in the muscular structure itself. He therefore called it myasthenia pseudo-paralytica gravis.

Whatever name may be given, they all have the same important diagnostic points: the ptosis, the disturbance in mastication, deglutition and speech, the peculiar phenomena shown in the muscular functions, the lack of atrophy of the muscles and the comparative short duration of the disease.

Of the cases which have come to autopsy, no pathological changes have been found.

As to what the etiology may be, it is uncertain; probably worry, excitement and overwork, coupled with a nervous temperament, play an important part.

One or two cases started with a bad cold.

Of the twenty-one cases reported, twelve died. Two of the others passed out of observation, but, from their condition, probably died. Only seven recoveries are reported.

The treatment consists of absolute rest, forced nutrition, light massage and electricity applied to the muscles, and general galvanism. Internally, strychnine, arsenic and phosphorus have been used.

No autopsy was allowed in this case; but I feel sure if one had been held, no pathological changes would have been found. From the course and symptoms of the disease, reasoning by analogy, we have a right to call this case one of asthenic bulbar paralysis.

Medical Progress.

REPORT ON GENITO-URINARY SURGERY.

BY F. H. WATSON, M.D., BOSTON.

CATHETERISM OF THE URETERS IN THE MALE.

MEYER¹ describes the manner of catheterizing the male ureters; it is an extension to the male of the method used by Dr. Howard Kelly in the female.

The bladder is washed out and cocaineized, and from five to seven ounces of clear fluid are introduced. The ureter cystoscope, containing the ureter catheter, is then passed; after the interior of the bladder is inspected, and the ureteral openings have been seen, the catheter is inserted for a distance of two inches into the ureter.

LITHOLAPAXY.

Richard Baker² publishes 204 cases of litholapaxy performed in India, in addition to the 200 already reported by him in the *Lancet* of October 10, 1896. These 404 cases furnish another example of the remarkable low mortality which attends the operation of Bigelow as it is practised in India by British surgeons.

¹ *Journal Cutaneous and Genito-Urinary Diseases*, June, 1897.

² *Lancet*, September 11, 1897, p. 648.

upon native patients, it being in his last series 0.49 per cent. The cases are tabulated and summarized as follows:

Mussulmans	168
Hindoos	36
Males	200
Females	4
Ages under one year	1
One to three years	65
Six to ten years	36
Eleven to fifteen years	4
Sixteen to forty-five years	53
Forty-six to fifty-five years	28
Forty-eight to sixty-five years	13
Over sixty-five years	6
Average duration of operation	12 min. 19 sec.
Average weight of stone	2 drachms, 46 grs.
Average stay in the hospital	little under 2 days

The strikingly successful results of this operation in the hands of surgeons in India are probably to be referred to the enormous number of cases of stone which occur in that country as compared with others, and the greater technical dexterity gained thereby by the operators, and to the peculiar power of the native to withstand surgical operations. The same proportion of success cannot be expected to be reached elsewhere.

URETERO-PYELO-NEOSTOMY.

Bazy³ reports two cases of large hydronephroses, in which, avoiding nephrectomy, he restored the free flow of urine through the ureter, in the first instance by resecting the ureter and implanting its distal end in the pelvis of the kidney. The kidney was reached by median laparotomy. The fluid was withdrawn from it by an aspirator, and its pelvis incised, the orifice of the ureter was found to be compressed by the distended pelvis, far up upon one side of which it took its origin. A catheter was passed into the ureter through the incision in the renal pelvis, and a portion of the ureter was resected; the free end was then slit upon one side slightly in order to make a larger entrance, and was sutured into the most dependent portion of the renal pelvis; the soft catheter was passed into the ureter through the wound in the pelvis, a hole being cut in that portion of the instrument which lay within the pelvis of the kidney in order to drain the latter. The wound of the renal pelvis was then sewed to the abdominal wound, the catheter passing out through the latter. The patient made a good recovery. The urinary fistula closed, and the restored ureter performed its function adequately. The second patient died.

TOTAL EXTIRPATION OF THE BLADDER FOR DIFFUSE CANCER.

Tuffier⁴ gives the case of a man forty years old, who had had symptoms of dysuria, hematuria, and painful micturition for several years. Tuffier performed a suprapubic cystotomy, and found a diffuse cancerous growth occupying almost the whole of the interior of the bladder, but not extending beyond the organ, there was no glandular involvement discoverable. The operator succeeded in freeing the peritoneal investment of the bladder entirely from the organ without opening the peritoneal cavity. The ureters were cut off and implanted one into either side of the rectum, and ureteral catheters attached by a stitch in each ureter were led through the anus. The abdominal wound was closed except at its lower angle,

³ *Revue de Chirurgie*, May 10, 1897.

⁴ *Ann. des malad. des Org. Genito-Urinaires*, t. xv, p. 130.