VESICAL STONES ASSOCIATED WITH GENITAL PROLAPSE

by

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Everett in his Text Book on Gynaecological and Obstetric Urology writes that vesical calculi are rare in the female as compared to the male because blocking of the short female urethra is rare. The short female urethra can expel the nuclei before they can form stones in the bladder.

However, in conditions where there is always some residual urine in the bladder, such as cystocele or uterine prolapse, there is likelihood that stones will form in the bladder if the condition causing the residual urine is allowed to persist for a long time. Moreover, whenever there is stasis of urine, chances of infection are greater and it is well known that infection plays no small role in the formation of stones.

Working on the above hypothesis we would expect bladder stones more frequently in association with genital prolapse, bearing in mind that genital prolapse is one of the commonest conditions treated in all hospitals. However, we were very much surprised when we could find very few case reports in the last 25 years' literature published in the English language.

Gladys Kay described one case of bladder stones in procidentia before the North of England Obstetric and Gynaecological Society in November, 1953. She also described some cases reported previously.

According to Gladys Kay, the first case reported was by William Gardner of Montreal. The patient was 73 years old with procidentia of 22 years' duration. There were many vesical calculi of varying sizes. She removed the calculi through a large incision in the anterior vaginal wall and bladder base. The opening was not sutured but left open for drainage. Subsequent progress of this patient is not reported.

Steichele in Zeitschrift fur Urologie, 1951, reported a case of total prolapse with five stones in the bladder. He removed the bladder stones through a high incision in the anterior vaginal wall. The prolapse was repaired later.

Kay's case was 76 years old with procidentia of 30 years' duration. She had incontinence of urine for 3 days only. She had actually inflamed and septic procidentia. Pus was seen pouring from the urethra. When sepsis subsided intravenous pyelography was done which showed bilateral hydronephrosis with large bladder calculi. Four large calculi were removed from the bladder.

Thackston reported one case in

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1943. She was a 50 year old woman with prolapse of uterus of 12 years' duration. She gave history of one normal delivery after appearance of prolapse. On examination she had procidentia and the bladder was palpable and felt like a cloth-sack filled with rocks. The mass was irreducible. The urinary meatus was gaping and admitted the tip of the index finger partially. Fifty-two faceted stones were removed from the bladder by suprapubic incision. The procedentia was repaired later.

The fifth case report is by Mann. He reported two cases of bladder stones in genital prolapse. The first of his cases was a 62 year old woman with procidentia of 5 years' duration. She gave the history of passage of calculi per urethram. On examination, she had procidentia with a large cystocele, rectocele and enterocele. The vaginal mucosa was oedematous and thickened. Procidentia was reducible. X-ray showed the presence of bladder calculi, and cystoscopy confirmed the presence of stones. Suprapubic cystolithotomy was done under spinal anaesthesia and 20 faceted stones were removed. The prolapse was repaired after 12 days.

The second case is that of a 71 year old woman with procidentia of 23 years' duration. The presence of stones was confirmed by X-ray and cystoscopy. Thirteen faceted stones were removed by suprapubic route. The prolapse was repaired later.

The author states the necessity of complete urological survey of all cases of procidentia before resorting to surgery.

These are the only cases that could be found in the literature. In the article on "Pelvic Prolapse in Women over 60 Years, a Study of 500 Cases" by Frost, there is no reference to vesical calculi in any of his cases. In another article by Smith on 'Study of Procidentia—683 Cases treated between 1875 and 1928 at Free Hospital for Women", there is no mention of vesical calculi in any of the cases. In a recent study of 166 cases of procedentia by Tyrrone, there is no mention of vesical calculi. Wallingford, in his article on "Changes in Urinary Tract associated with Prolapse of Uterus", makes no mention about bladder stones. No bladder stones were found in a fatal case of uraemia due to prolapse uterus reported by Frank, though there was bilateral hydronephrosis and hydroureters. Maher and Wosika, in their article on "Prolapse Uterus, Hydronephrosis and Hypertension", make no mention about bladder stones.

We could not find any similar case report in our Indian Journal of Obstetrics and Gynaecology right from its inception. A fair number of articles have appeared on genital prolapse in our Indian Journal of Obstetrics and Gynaecology, viz. articles by Krishnan, Tampan, Satur and Chakravarti, etc. Even in a recent article by Ghosh on "Vesical Changes in Cystocele—a Cystoscopic Study of 104 Cases", there is no mention of bladder stones.

Such classical books on urology by Badenoch, Riches, Lowsley and Kirwin only make a mention that bladder stones in females are uncommon and they may be found when

there is increased amount of residual urine in the bladder for some time.

Masani in his Text Book on Gynaecology makes no mention about the possibility of bladder stones in genital prolapse. Malpas in his Monogram on Genital Prolapse only mentions that calculi sometimes form in cystoceles. This occurrence is usually coincidental, the underlying cause being a foreign body or a small renal calculus. Very few of the other standard text books on gynaecology even make a mention of bladder stones in genital prolapse.

We present here two cases of bladder stones associated with Genital Prolapse detected within a short period of 2 months.

Case 1. A Christian female of 45 years age was admitted in Gynaecological Ward of the K.E.M. Hospital on 11-5-57 with procidentia of 15 years' duration. She had difficulty in passing urine for the last 6-8 months. She was menopausal for 3 years. No history of urinary stones in the family. She was non-vegetarian. On examination she had procidentia. There were patches of pigmentation on anterior and posterior vaginal walls near the cervix. Prolapse could not be reduced. There was no ulceration of the vaginal mucosa. Length of the uterine canal was 2½ inches. Urinary bladder was not well palpable. Her blood urea was 21 mgms. and blood N.P.N. was 44 mgms. Intravenous pyelography showed bilateral ptosis of the kidneys, hydronephrosis, hydroureters and kinking of the ureters. No stones in kidney or ureter. There was a single stone in the bladder which was missed both by us and by the radiologist.

Mayo-Ward hysterectomy was done one week after admission. She complained of difficulty in passing urine 7 days after operation. The perineal wound was slightly infected. Patient was discharged on the 14th day. She was readmitted one month after her first operation for cystocele, enterocele and vault prolapse. The perineal wound had given way. Intravenous pyelography was repeated as she had urinary complaints. Over and above the changes of hydronephrosis and hydroureters, it showed the presence of a solitary stone in the urinary bladder 2½ x 1¼ inches in size. The presence of the stone was recognised this time and as the urinary complaints were thought to be due to the stone, suprapubic cystolithotomy was done one week after her second admission. During this operation her blood pressure fell and she had a collapse. Usual resuscitative measures were taken. Her E.C.G. showed posterior infarction. The patient died on the third post-operative day.

Case 2. A 50 year old Hindu female was admitted in Gynaecological Ward of the K.E.M. Hospital on 31-7-57 with procidentia of 6 years' duration. She had difficulty in passing urine and burning micturition for last 8-10 days. She was a vegetarian and there was no history of urinary stones in the family. On examination she had procidentia. A few superficial ulcers were seen on the anterior vaginal wall and to the sides. Length of uterine canal was 2½ inches. Urethral meatus was oedematous and patulous. A stone was seen protruding out of the meatus. The stone was milked out and the meatus was re-examined. It was so patulous that little finger could be passed up to the bladder with ease. Her blood urea was 12 mgms. and blood N.P.N. 33 mgms. Plane X-ray urinary tract showed multiple stones in the bladder about 8 in number. No stones were seen in the kidney or ureter.

The bladder stones were crushed with a lithotrite and removed with a Bigelow's evacuator. Self-retaining catheter was kept for one week when she was taken up for Mayo-Ward hysterectomy. Except for slight fever, she had an uneventful recovery.

The above two cases are interesting and instructive. The first case is interesting because the diagnosis of bladder stone was missed though the stone could be seen later by X-rays. Radiologist missed the stone because he never expected the urinary blad-

der so low. We missed the stone because we did not think of stone. The second case was rather simple and the diagnosis was apparent as the stone was protruding at the urinary meatus. Moreover, we had become stone conscious after missing them in the first case.

Aetiology of Vesical Calculus

Virchow, in 1847, was the first to recognise urinary obstructive symptoms in genital prolapse. But he did not mention the formation of stones.

Bretton and Rubin in 1923 tried to explain the mechanism of urinary obstruction in the following way:

1. Kinking in ureters and cystocele.
2. Intramural stretching in bladder wall with stenosis.
3. Compression of ureters by uterine artery.

Bladder stones can form primarily in the bladder or the nucleus may descend from the kidney or ureter and stone may secondarily form in the bladder. Over and above the other known factors in causation of bladder stones, viz. climate, heredity, race, endocrine disturbance (hypoparathyroidism), diet, prolonged recumbent posture, etc., infection and stasis of urine also play an important role.

Normally, a small renal stone or the nucleus of the potential stone that has passed into the bladder through the ureter is usually evacuated, more easily in the female. Thus if the bladder drainage is good, normally these small nuclei which come from the kidney do not form stones. But when there is some obstruction to the passage of urine, which always causes some residual urine in the bladder, these small nuclei or the small stones remain in the bladder where they get a cover of various phosphatic salts and thus increase in size.

Moreover, stones can form primarily in the bladder without nuclei or small stones descending from the kidney. Any condition which gives rise to residual urine will influence precipitation of salts with tendency to stone formation.

The structure of such stones is usually a mixed one. They contain salts of uric acid, oxalate of lime, sodium and ammonium urates, etc.

As in the cases reported so far there are very few cases where stones were seen in the kidney or ureter, there is reason to believe that in cases of procidentia, stones usually form primarily in the bladder.

Diagnosis

Diagnosis of bladder stones in prolapse is likely to be missed unless the possibility is kept in mind every time. Urinary complaints may be thought of to be due to prolapse alone and the presence of stone may be missed.

We do not believe that bladder stones are so uncommon in genital prolapse. We offer the following explanations for the very few case reports of such an association:

(1) All cases of procidentia may not have been investigated from the point of view of bladder stones and so the stones may remain undiagnosed.

(2) Reluctance on the part of medical people to report such cases

considering them unimportant for reporting.

(3) Bladder stones in genital prolapse may be really very uncommon.

We suggest that every case of procidentia of more than five years' standing should have an X-ray of the urinary tract taken (if not intravenous pyelography in all cases) before resorting to surgery. We are sure that if this routine is followed, we are likely to detect more cases of bladder stones in procidentia. Use of bladder sound is an important aid in detecting bladder stones.

Management

This is a very important problem. Surgeons differ in their approach to such cases. There are three possible approaches to such a problem. They are:

(1) To deal with bladder stones first and repair the prolapse later.

(2) To deal with bladder stones and prolapse at the same time.

(3) To repair the prolapse first and deal with stones subsequently.

The first approach of dealing with bladder stones first and repairing the prolapse later appears more rational. It is always desirable to remove the stone first, give sufficient time for the associated urinary infection, which is invariably present, to subside and then proceed with repair operation. Moreover, post-operative period after repair of prolapse is smooth and chances of persistence of urinary complaints are minimised. There is persistence of urinary symptoms and post-operative period may be stormy, if the stone is allowed to remain in the bladder.

The second approach of dealing with stones and prolapse at the same time is at times feasible. Especially if associated urinary infection is minimal or absent, this procedure is advisable as it avoids two operations. It is better to remove the stones by opening the bladder per vaginam. After dissecting the two vaginal flaps and mobilising the bladder, opening may be made and stone removed. If there is not much infection, primary closure of the bladder should be done. Others may advise keeping a drainage tube through the bladder opening. This approach is not sound in presence of urinary infection.

The third approach of dealing with the prolapse first and stones afterwards appears to be irrational, because we are not removing the stones, and bladder infection is allowed to persist. But, at times, one is faced with such a situation as we were placed in our first case. When the stones in the bladder are not detected beforehand, repair of the prolapse is undertaken and as the urinary symptoms persist, stones are detected later. In such cases there is no alternative but to remove the stone after repair of prolapse. When repair operation is done and if the stone is to be removed, it should not be removed per vaginam. There is fair amount of fibrosis and it is not desirable to break the buttress for the bladder with subsequent chances of cystocele.

Another important question to be considered is how to remove the bladder stones. There are three possible ways of removing them. They are:

1. Use of lithotrite and Bigelow's evacuator.

2. Vaginal cystolithotomy.
3. Suprapubic cystolithotomy.

The use of a lithotrite and Bigelow's evacuator is ideal if the standard conditions are satisfied. This method does not require any incision. Self-retaining catheter should be kept for a few days for good drainage. This method was successfully used in our second case.

Second method is vaginal cystolithotomy. This method appeared to be very popular in the past as it appears from the reported cases. These days there is a trend to use vaginal approach less and less because it is believed that vaginal and bladder mucosa are usually devitalised because of the stone. So the chances are that vaginal incision might give way and vesico-vaginal fistula may result.

Third approach is suprapubic cystolithotomy. These days this approach is favoured when lithotrity is not possible. It is a good surgical rule to remove the stones first and allow good drainage of urine and to treat infection before doing repair of prolapse.

Summary

1. Literature on bladder stones in prolapse is reviewed.
2. Need for investigation for bladder stones in prolapse of long standing is stressed.
3. Two cases of bladder stones in prolapse are reported.
4. Aetiology of bladder stones is discussed.
5. Diagnosis of bladder stones is briefly mentioned.
6. Treatment of bladder stones in genital prolapse is discussed at length.

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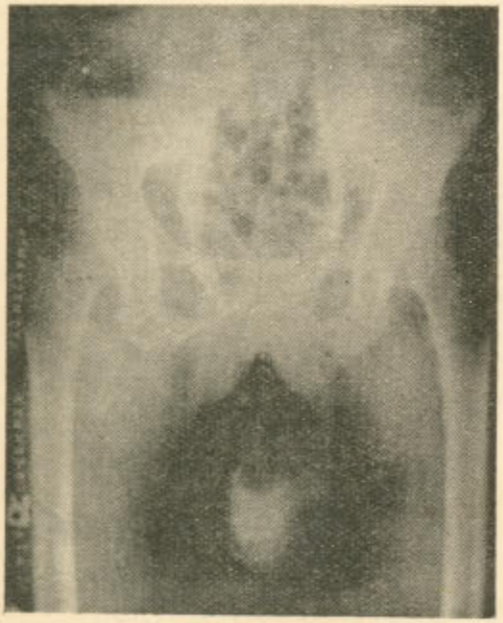
Fig. 2. Case 1.



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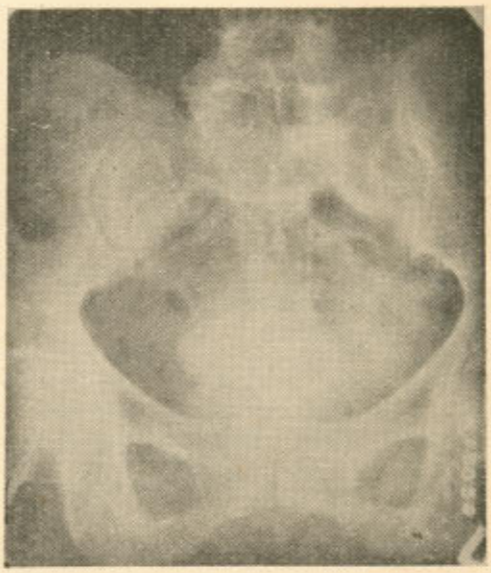

Fig. 3. Case 2.