

# A STUDY OF URINARY TRACT INFECTION AFTER VAGINAL REPAIR OPERATION FOR UTEROVAGINAL PROLAPSE

by

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In the past few years there has been increased awareness of urinary tract infection in certain gynaecological cases, such as genital prolapse and pelvic tumours which causes stasis and hence infection. Operations for prolapse are followed by either continuous or intermittent drainage of urine by catheter for several days and are likely to cause infection of lower urinary tract. The purpose of the present study is to see the incidence of urinary tract infection in utero-vaginal prolapse, pre and postoperatively and whether the postoperative infection can be prevented by avoiding the use of catheter postoperatively in routine.

## Material and Methods

One hundred and fifty-seven cases of genital prolapse admitted in gynaecological ward of J.L.N. Hospital, Ajmer were studied with or without urinary complaints. All the cases were operated and the catheter was not used in all the cases postoperatively. In all 314 cultures were done. Midstream urine was collected and after microscopic examination the urine was cultured in glucose broth and on Mac Conkeys media. Bacterial count was done which permits the separation of contamination from true bacteriuria, count less than 100,000/ml of urine was regarded as contamination or the common sapro-

phytes of the urinary tract. If the bacterial count was more than 10,00,000/ml of urine or more then it was considered to be significant. The isolates were characterised and their anti-biotic sensitivity determined by disc diffusion technique.

## Observations

The present study consists of study of 157 cases of utero-vaginal prolapse. The ages ranged from 20 to 70 years and parity ranged from para one to para 6 and above. Of the 157 cases, first degree prolapse was present in 8, second degree in 27, third degree in 120 and only cystocele and rectocele in 2 cases. Of the 157 cases urinary tract infection was present only in 55 (35.03%). The different operations performed were vaginal hysterectomy and repair in 123, Manchester repair in 25, anterior colporrhaphy and posterior colpoperineorrhaphy in 8 and Shirodkar operation in 1 case. Table I shows the pre and postoperative positive urine culture. Table II shows the use of catheter in different operations and the positive urine culture. Table III shows the incidence and nature of organism grown and Table IV summarises the sensitivity to the antibiotics.

## Discussion

The incidence of urinary tract infection in cases of utero-vaginal prolapse is common. In the present series, the infection was present in 55 (35.03%) cases as seen

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TABLE I  
Pre-operative and Post-operative Positive Urine Culture

Nature of Op.	Total cases	Preoperative Positive Culture		Postoperative Positive Culture	
		No. of cases	%	No. of cases	%
Vaginal hyst. and pelvic floor repair	123	53	43.08	98	76.56
Manchester repair	25	2	8.00	15	60.00
Anterior Colporrhaphy and post. colpoperineorrhaphy	8	—	—	4	50.00
Shirodkar Op.	1	—	—	—	—
Total	157	55	35.03	117	74.52

TABLE II  
Use of Catheter in Different Operation and Incidence of Positive Urine Culture

Operations	Cases never catheterised	Positive urine Culture		Cases catheterised	Positive urine cult.	
		No. of cases	%		No. of cases	%
Vaginal hyst. and repair (123)	55	33	60.00	68	63	92.64
Manchester repair (25)	11	3	27.27	14	11	78.57
Anterior and posterior colpoperineorrhaphy (8)	5	—	—	3	3	100.00
Shirodkar Op. (1)	—	—	—	1	—	—
Total (157)	71	36	50.70	86	77	89.53

by positive culture. This is nearly in correlation with Talib *et al* (1975) who noted it in 35.4%, Bhasker Rao *et al* (1969) reported in 42.8% and Upadhyay and Verama (1969) 66% cases. The causative factor of urinary tract infection in these cases is incomplete emptying of the bladder resulting in stasis of urine and hence infection.

Today the most frequent complication of gynaecological surgery is urinary tract infection since other complications like haemorrhage, shock and peritonitis have been controlled. The urine culture and sensitivity test are not only essential but must be done repeatedly for proper guidance and specific therapy. The urinary

tract infection occurs postoperatively even when preoperative infection is not present. Hence keeping this in mind the causative factor of this is evaluated in the operation for prolapse as catheter is used frequently in these cases postoperatively as well before starting the operation. As seen in Table I, of the 157 cases operated postoperative urine culture was positive in 117 (74.52%) of cases. Of these, in 55 (47.00%) cases it was present before operation. In the remaining 62 cases the causative factor was catheterisation in 47 (75.80%) either before or after operation. In the remaining 18 (29.03%) cases it was due to tissue reaction to operation. In 7 cases preoperative posi-



tive culture became negative postoperatively with proper antibiotics.

It has been demonstrated that urinary tract infection is directly proportional to the frequency of catheterisation of the 157 cases operated, catheterisation was done only in 86 (54.77%) cases and in 71 (45.22%) cases no catheter was used as shown in Table II. Of the 86 cases in whom continuous drainage was done by catheter after operation, positive culture was present in 77 (89.53%) in contrast to 36 (50.70%) amongst 71 cases in whom catheter was not used postoperatively as shown in Table II.

The incidence of urinary tract infection as noted by Paterson *et al* (1960) with an indwelling catheter was 92.5% and with intermittent catheterisation 70%. Slade and Linton (1960) reported 29.0% of urinary tract infection with single passage of catheter, while with an indwelling catheter and open drainage the incidence of infection was 100% and 95% with closed drainage system (Gillespie *et al* 1967). Talib *et al* (1975) noted positive urine culture in 56.6% cases where catheterisation was done after operation. Upadhyaya and Verma (1969) noted urinary tract infection after vaginal hysterectomy and repair in 40%, after Manchester 31.3% and after anterior and posterior colpoperineorrhaphy in 65.0% of cases and attributed it to catheterisation and tissue trauma. In the same study he noted that in 30% of cases with positive urine culture preoperatively 17% had positive urine culture postoperatively as well, while 13% showed no symptoms with proper antibiotics and their culture became sterile. Of the 70% cases with negative preoperative culture, 29.8% had positive postoperative culture.

Thus it can be concluded that if postoperative catheterisation is avoided after

repair operation for prolapse in routine urinary infection can be avoided as is seen in the present study. It should also be kept in mind and one should not be too rigid in not using the catheter in postoperative period as there is some residual urine remains or retention of urine if remains for a longer time encourages infection. Hence it is better to catheterise too soon than too late if there is residual urine in postoperative period as cystitis is more likely to result from residual urine than from passage of the catheter. The causative factor of infection catheterisation has been studied. The female urethra always contains microorganism, these however do not cause urethritis unless the urethra is damaged nor do they spread upwards to the bladder unless transported by catheter. The bacteria are introduced in bladder at the time of catheterisation by faulty technique. A likely source of infection is from introitus or urethra, which cannot be completely sterilised. The other possible route of entry may be fluid filled in thin space between the catheter and urethral mucosa, which contains pus and urine, and is rich culture media for the multiplication of bacteria and with the movement of the catheter infection is liable to ascend. With the open drainage the ascent of infection is through air bubble along the drainage and then through the catheter is common. During open drainage both the invasion of sensitive organism along the urethra and ascent of hospital organisms up the drainage tube would be expected and were in fact found, whereas on closed drainage only infection by patient's own organism would seem likely.

The reason attributed to higher incidence of urinary tract infection after prolapse operation without use of catheter is due to the fact that some degree of injury



to bladder occurs. Any operation which involves dissection of vesicocervical space, as in cases of prolapse operation, may cause small haematoma formation in the adjacent bladder muscle, or sutures placed in the pubocervical ligament have the same effect which provokes a moderate local inflammatory reaction leading to some retention of urine and infection. Infection and oedema of stitch line further causes urethritis and cystitis. There may be obstruction to urethra after operation due to inflammatory reaction and oedema of stitch line and hence incomplete emptying of the bladder.

Upadhyay and Verma (1969) are of the opinion that postoperative bladder in gynaecological surgery is deprived of its nerve supply and pericystitis usually accompanies the above injury. Hence the inability to void due to atony of bladder secondary to nerve injury leading to incomplete emptying of bladder, stasis and urinary infection.

Of the 314 urine cultures in the present series, positive cultures were observed in 172 (54.77%) of cases. Single organism was observed in 146 (84.88%), while mixed infection in 26 (15.11%) cases. Bhasker Rao *et al* (1969) noted single organism in 58.9% and mixed in 41.1%,

while Talib *et al* (1975) noted single organism in 88.6% and mixed in 11.4% cases. The most frequent isolate was *Esch. coli* in 52.32% cultures in the present series as shown in Table III, while Bhasker Rao *et al* (1969) noted it in 51.6%, Upadhyay and Verma (1969) 82.8% and Talib *et al* (1975) in 47.1%. The next frequent organism in the present series was *Klebsiella aerogens* in 20.93% of cultures which is in correlation with Bhasker Rao *et al* (1969) but higher than Talib *et al* (1975) 5.4%. This may be due to the fact that it may be a hospital organism. The explanation given for the predominance of *Esch. coli* is that female urine is at an optimal Ph and osmolality for its growth which is further favoured by pregnancy. In the present series, chromycetin was found to be the best urinary antiseptic against *Esch. coli* as shown in Table IV. In 1.11% cases *Esch. coli* were resistant to all drugs. Talib *et al* (1945) noted mandelimine to be the drug of choice in *Esch. coli* infection and noted that 28.2% were resistant to all drugs. In the present series, *Klebsiella aerogens* and *B. proteus* was sensitive to mandelamine and next drug was chromycetin, Talib *et al* (1975) also noted mandelamine the drug of choice against the above organisms.

TABLE III  
Nature of Organisms Grown

Organisms	No. of cases	Percentage
<i>Esch. Coli</i>	90	52.32
<i>Klebsiella aerogens</i>	36	20.93
<i>B. Proteus</i>	14	8.13
Paracolon bacilli	3	1.74
<i>Staphylococcus coagualse positive</i>	1	0.58
<i>Streptococcus fecalis</i>	2	1.16
Mixed infection	26	15.11

TABLE IV  
Antibiotics Sensitivity Pattern of the Isolates

	Esch. Coli	Kl. Aerogens	B. Pro- teus	Para- colon	Mixed
Streptomycin	53.33	50.00	50.00	66.66	46.15
Tetracycline	10.00	19.44	14.28	—	19.23
Chloromycetin	74.44	63.88	50.00	33.33	76.92
Fluradentin	63.33	61.11	28.57	100.00	61.53
Septtran	63.33	38.88	35.71	—	57.69
Lodermycin	14.44	16.66	7.14	—	15.38
Mandelamine	68.88	55.55	64.28	—	61.53
Ampicillin	6.66	8.33	7.14	33.33	7.69
Garramycin	6.66	11.11	14.28	66.66	19.23
Resistant	1.11	5.55	—	—	7.69

### Summary

One hundred and fifty-seven cases of uterovaginal prolapse are studied, all the cases were operated. Preoperative positive urine culture was present in 55 (35.03%) cases. Of the 157 cases operated postoperative positive culture was present in 117 (74.52%) cases. Of the cases operated, in only 86 (54.77%) cases were catheterised and in 77 (89.53%) cases positive urine culture was present in contrast to 36 (50.70%) of the 71 cases where catheter was not used. The causative factor of positive urine culture with or without catheterisation is discussed. Hence it is concluded that if catheterisation is avoided in routine after prolapse

operation urinary tract infection can be prevented in few percentage of cases.

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