

Clean Intermittent Non Sterile Self Catheterisation (CISC)—A Better Choice in Paraplegic Bladder

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Urinary tract complications constitute the major cause of morbidity and mortality in the paraplegic patients. Indwelling bladder catheterisation at present in use in various paraplegic centres is probably responsible for most of the urinary tract complications. Clean intermittent self/assisted catheterisation as against continuous indwelling catheterisation has shown encouraging results (Lapide et al. 1972, Rao et al. 1979). Present study done in 110 Paraplegic/Tetraplegic patients compares their relative role and highlights the better overall efficiency of CISC.

MATERIAL AND METHODS

One hundred and ten patients with paraplegia/tetraplegia who were admitted and treated in a big service hospital during the last four years were included in the protocol. They were divided into groups A and B as under:—

Group A : Forty patients managed with indwelling Catheter (Folleys/Gibbons). Catheter and bag were changed every week.

Group B : Seventy patients managed with clean intermittent non sterile self/assisted catheterisation (CISC) (Fig 1 and 2). Truncated Gibbons catheter size 14 was used (Fig. 3) with sterile liquid paraffin as lubricant.

Patients in both groups were allotted at random and matched in age, sex and other anthropometric parameters.

In both groups catheterisation was discontinued as and when a state of balanced bladder was achieved. Through repeated local and systemic examination was carried out. Urine routine examination and culture, blood urea, serum creatinine and residual urine assessment

was done once in 15 days. Intravenous urogram, micturating cystogram, carbon dioxide cystometry and electromyography were carried out after 3 months and at the time of discharge from the hospital.

RESULTS

A total of 110 patients divided at random in group 'A' and 'B' with 40 patients in group A and 70 in group B were studied. In these groups ninety-two were in the age group of 20-40 year. There were one hundred and two males and eight females, indicating a predominance of males due to the younger male dominant population group dependant on service hospitals. Supra sacral lesions were common (87%) than the sacral lesions (13%). Lower thoracic injury followed by lower cervical injury were the commonest lesion in the present study (Table I). In both the groups age and sex were matched. The only variable was the mode of catheterisation, so as to critically evaluate its role in the two groups.



Fig. 1. Self Catheterisation by a paraplegic patient.



Fig. 2. Assisted catheterisation in a tetraplegic.



Fig. 3. Catheterisation Kit consisting of truncated Gibbon's catheter and few gauze pieces in a polythene bag.

Significantly better results were achieved in group B as compared to group A. Less than 50 ml of residual urine was noted in 88% patients of group B as against 18% in group A after six months (Table I). Radiologically upper urinary tracts were abnormal (15%) in group B as compared to 70% in group A. Abnormal lower urinary tracts in 25% in group B was much less as compared to 58% in group A. Over all Radiological involvement

of upper and lower urinary tracts was much less in group B (Table I). Urine at the time of discharge was sterile in 92% of group B, while it was sterile only in 32% of patients in group A (Table II). Urinary bladder, urethral and detrusor sphincter functions were better in group B as compared to group A (Table II). Balanced bladders could be achieved in 93% in group B as compared to 47% in group A (Table II).

All these findings indicate a better and attractive bladder recovery in patients treated with CISC.

Table I. Paraplegic bladders: details of level of injury (a), residual urine (b) and results of radiological assessment in the two groups (c)

| | Group A | | | Group B | | |
|-----------------------------|---------|----------|--------|---------|----------|---------|
| (a) Level of Injury | | | | | | |
| Upper Cervical | | 1 | | | 3 | |
| Lower Cervical | | 10 | | | 11 | |
| Upper Thoracic | | 2 | | | 3 | |
| Lower Thoracic | | 20 | | | 41 | |
| Lumbo Dorsal | | 5 | | | 5 | |
| Lumbar | | 2 | | | 7 | |
| Total | | 40 | | | 70 | |
| (b) Residual Urine | 1m | 3m | 6m | 1m | 3m | 6m |
| 100 ml | 30 | 24 | 21 | 30 | 9 | 0 |
| 50-100 ml | 10 | 12 | 12 | 21 | 26 | 8 |
| 50 ml | 0 | 4 | 7(18%) | 14 | 35 | 62(88%) |
| | 40 | 40 | 40 | 70 | 70 | |
| (c) Radiological Assessment | | | | | | |
| Upper urinary tract | | | | | | |
| Normal | | 12 (30%) | | | 60 (85%) | |
| Abnormal | | 28 (70%) | | | 10 (15%) | |
| Lower urinary tract | | | | | | |
| Normal | | 17 (42%) | | | 63 (90%) | |
| Abnormal | | 23 (58%) | | | 07 (10%) | |

DISCUSSION

Continuous indwelling catheter with condom as a mode of drainage in dysfunctional bladders is frequently used. This is fraught with various risks and dangers especially troublesome and hard to treat infections in the urinary tract. Constant requirement of catheter care, changing the catheters and bags once a week, blockage of catheters necessitating frequent irrigation, persistent infection requiring use of expensive antibiotics for long periods, and cost of multiple operative procedures are the

Table II. Paraplegic bladder—comparative details of effect of management in group A and B

| | A | B |
|----------------------------------------------------|---------------|----------|
| (a) Final Urinary bladder state | | |
| Balanced | 19 (47%) | 65 (93%) |
| Unbalanced | 21 (53%) | 5 (7%) |
| (b) Urine Culture Positivity | | |
| At admission | 100% | 88% |
| During bladder training | 100% | 92% |
| Final | 92% | 32% |
| Septicemic deaths | 3 | Nil |
| (c) Carbon dioxide cystometry and Electromyography | 20 cases each | |
| “Bladder function” | | |
| Normal | 3 | 11 |
| Hyper-reflexic | 13 | 6 |
| Areflexic | 4 | 3 |
| “Urethral function” | | |
| Normal | 7 | 14 |
| Hyper-active | 13 | 5 |
| Inactive | Nil | 1 |
| “Detrusor Sphincter” | | |
| Dyssynergia | 10 | 1 |

other problems and are constant source of economical strain on the paraplegic centres. Cost of multiple surgical procedures to deal with complications like urethral fistulae, diverticulae, bladder stones, vesicoureteral reflux is additional source of financial drain on these centres. Clean intermittent Self/Assisted Catheterisation advocated by Rao et al. (1979) sounds absurd to many Surgeons and they are surprised whenever clean intermittent self catheterisation (CISC) is advised. Its use in our centre has completely changed the pattern of problems faced by us earlier. Patients with symptomatic clinical infection have considerably reduced from 85% to 15% inspite of persistent bacteriuria, thus considerably reducing the use of antibiotics and associated complications. Radiologically 70% abnormal upper tracts noted in group A have reduced to 15% in group B. In group B at the end of six months achieving 93% of balanced

bladder is rewarding as compared to 47% in group A.

Danger of recurrent urinary tract infection due to unsterile catheter is not a problem. Intermittent catheterisation prevents over stretching of urinary bladder producing bladder ischaemia. The bladder urothelium, in the absence of trauma, does not allow bladder infection to establish, so long as bladder is completely emptied. Endogenous infection by self catheterisation in patient who is already immunologically competent against his own bacterial flora does not cause symptoms.

Persistent/recurrent infection in both groups during bladder training is very common but in group B, infection does not produce serious complications noted in group A and thus does not require prolonged, repeated surgical procedures necessitating prolonged hospital stay. The present study therefore concludes that aims of paraplegic bladder management are ideally achieved by CISC.

CONCLUSION

1. Institution of clean intermittent self catheterisation from the very beginning is rewarding. It helps in early rehabilitation of paraplegics and is strongly recommended for use in the paraplegic centres.

2. It reduces the urethral, bladder and renal complications considerably and helps in developing the balanced bladders at the earliest. It does not require aseptic catheterisation by the Medical Officers as suggested by others. One catheter lasts for about 3 months and this cuts down recurring expenditures on catheters and bags. It cuts down the cost of prolonged courses of antibiotics usually required in group A.

3. It reduces the work load on the hospital by doing away with autoclaving of equipment.

4. Aims of paraplegic bladder management are ideally achieved by CISC.

REFERENCES

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