

Role of Intermittent Self Catheterization after Cauda Equina Syndrome Surgery.

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Abstract

Background: To determine the effectiveness and safety of intermittent self catheterization in cauda equina patients who have lost the bladder control.

Methods : In this prospective study patients with symptoms and signs of cauda equina syndrome, due to lumbar disc herniation confirmed by relevant MRI ,were included. Emergency surgery was performed and post operatively these patients were taught the technique of intermittent self catheterization. After full aseptic measures patients were asked to sit on the chair and identify the meatus. Catheter was slowly inserted into the bladder,uptil the urine output was obtained. Pressure on the lower abdomen was applied to help in emptying the bladder. Nelton catheter was removed and was kept in a bottle of clean water. After couple of attempts patients learnt to pass the catheter. Patient was asked and helped to do this activity 3 to 4 times a day. The patient was discharged from the hospital only when he/she was confident enough to catheterize himself/herself. Initially patients were kept on biweekly follow up and later on monthly basis.

Results : Majority (86%) continued to undergo intermittent self catheterization, but 14% , elderly patients, experienced insertion difficulty and discontinued intermittent self catheterization. Ten patients (24%) had bacteriuria during the procedure. Epididymitis was seen in 2%. There were no urethral complications suggesting that the self-lubricating Nelton catheters are safe and less traumatic.

Conclusion: Intermittent self catheterization is a safe, effective treatment and is associated with improved quality of life in cauda equina syndrome patients.

Key Words: Intermittent, Self catheterization,Cauda equina,

Introduction

Cauda equina syndrome (CES) refers to a characteristic pattern of neuromuscular and urogenital

symptoms resulting from the simultaneous compression of multiple lumbosacral nerve roots below the level of the conus medullaris.¹ These symptoms include low back pain, sciatica (unilateral or, usually, bilateral), saddle sensory disturbances, bladder and bowel dysfunction, and variable lower extremity motor and sensory loss. ² Most common cause of cauda equina syndrome is the herniation (bulging) of a spinal disc in the lumbar area that presses on the nerves.³ Other causes are the narrowing of the spinal canal (stenosis),tumour, spinal infection, inflammation, haemorrhage or fracture.⁴ A complication from a severe lumbar spine injury such as a car crash, fall or other traumatic injury such as a stabbing can also cause cauda equina syndrome. ⁵

Although the lesion is technically involves nerve roots and represents a peripheral nerve injury, damage may be irreversible and CES may be a surgical emergency.^{6,7} Prompt treatment is required to relieve pressure on nerves. ^{8,9} Surgery must be done quickly to prevent permanent damage, such as paralysis of the legs, loss of bladder and bowel control, sexual function or other problems. ^{10,11} It is best if this occurs within 48 hours of the onset of symptoms.^{12,13} Depending on the cause of the CES high doses of corticosteroids may be required to reduce swelling. ^{14,15}

Even with surgery, patient may not retrieve full function. It depends on how much damage has occurred. Even after successful surgery, recovery of function can take years.^{16,17} Intermittent self-catheterization is a safe and effective way of managing patients with urinary retention or incontinence due to a neuropathic bladder. ^{18,19} It has transformed the lives of people rendered housebound by bladder problems and has preserved the kidneys of children with spina bifida, and of adults with spinal cord injury.^{20,21}

Patient choice and ease of use are major considerations in the decision-making process regarding which catheter to prescribe, as are lifestyle and the underlying bladder problem. Silicon catheters are preferred over latex ones as they are associated with less infection risk and also avoid potential allergies.²² Providing patients with a range of suitable

intermittent catheters will allow them to make informed choices and reduce wastage.^{23,24} Nélaton's catheters come in a range of sizes and are made out of polyvinyl chloride and are non-coated. They can be washed and reused for up to a week.²⁵

Patients and Methods

This prospective study was carried out in the Department of Neurosurgery, Fauji Foundation Hospital Rawalpindi from 2015 to 2016. The study included 42 adults (5 females, 37 males). The mean follow-up time being 24 months. All these patients with symptoms and signs of CES, due to lumbar disc herniation confirmed by relevant MRI ,were included in the study. Emergency surgery was performed and post operatively these patients were taught the technique of intermittent self catheterization.

The patients were taught the technique of intermittent self catheterization. Initially patients were educated in inserting the Nelton catheter. After full aseptic measures patients were asked to sit on the chair and identify the meatus. Lignocaine gel was applied on the tip of the catheter and catheter was slowly inserted into the bladder,uptil the urine output was obtained. Pressure on the lower abdomen was applied to help in emptying the bladder. Nelton catheter was removed and was kept in a bottle of clean water. After couple of attempts patients himself/herself learnt to pass the nelton catheter. Patient was asked to do this activity 3 to 4 times a day. Lady doctors and staff nurses helped the female patients in learning this technique. The patient was discharged from the hospital only when he/she was confident enough to catheterize himself/herself. Initially patients were kept on biweekly follow up and later on monthly basis. Their urinalysis and physical examination were done on every follow up visit.

Results

Patients learned the technique of intermittent self catheterization in less than a week and majority (86%) had successful intermittent self catheterization (Table 1). They had a little discomfort initially but later on it became very easy and practical for them . Fourteen percent faced insertion difficulty (Table 2). They catheterized themselves two to three times during day time and once before going to bed. They have resumed their jobs and daily activities and are on strict follow up. Elderly patients found the technique of catheterization difficult and stopped it. . Out of 42 patients, only 6 patients experienced insertion

difficulty and discontinued catheterization, they all were elderly patients. Thirty six patients continued intermittent self catheterization. Of the 36 patients in this group,25 patients successfully maintained a sterile urine, 10 had bacteriuria without pyuria were treated successfully with antibiotics. One patient developed epididymitis and was treated accordingly.

Table 1: Percentage of successful and unsuccessful intermittent self catheterization

Result	Patients	Percentage
Successful intermittent self catheterization	36	86%
Insertion difficulty	06	14%

Table 2: Results of intermittent self catheterization

Results	Patients	Percentage
Sterile urine	25	60%
Bacteriuria	10	24%
Insertion difficulty	6	14%
Epididymitis	1	2%

Discussion

Cauda equina syndrome (CES) is a rare condition which occurs most frequently following a large central lumbar disc herniation, prolapse or sequestration.¹ Around 50-70% of patients have urinary retention (CES-R) on presentation with 30-50% having an incomplete syndrome (CES-I).²The latter group, especially if the history is less than a few days, usually requires emergency MRI to confirm the diagnosis followed by prompt decompression by a suitably experienced surgeon.³ Earliest decompression removes the mechanical and perhaps chemical factors which are the causes of progressive neurological damage.^{4,5}

Urinary incontinence, difficult voiding and recurrent urinary tract infections are common in CES patients.⁶The symptoms may be associated with a high residual volume of urine owing to a neuropathic bladder.⁷ Provided that a significant residual volume of urine is found on abdominal examination, patients may be helped by intermittent self catheterization.⁸⁻¹⁰ By self catheterization, between four and six times daily patients can gain control over their bladders.¹¹ Abandoning indwelling catheters or bulky external appliances does much for a patient's morale and self esteem.¹² When the bladder is being drained effectively, urinary tract infections cease to be a problem and the kidneys are safeguarded.¹³ Severe

disability is not a contraindication since patients in wheelchairs have mastered the technique despite paraplegia, an anaesthetic perineum, spinal deformity, intention tremor, mental handicap, old age or blindness.¹⁴⁻¹⁶ It implies that the technique is clean and that it involves ordinary washing techniques, and the use of disposable or cleansed reusable catheters.^{17,18}

Intermittent catheterization has been shown to improve quality of life by providing better symptom management, reduction in the frequency of voids, which is especially beneficial at night, and improved sleep thereby reducing daytime fatigue.¹⁹⁻²¹ Emptying the bladder reduces the incidence of urinary leakage and may result in fewer UTIs.²² The increased confidence of managing bladder symptoms gives the patient greater freedom to participate in daily and social activities.²³⁻²⁵

There is a large group of patients who would not be able to gain the control of their sphincters. In those patients in which bladder control is not achieved and they are incontinent, intermittent self catheterization is the best solution.¹ Level of neurological dysfunction at surgery (incomplete CES vs. CES with retention) is probably the most significant determinant of prognosis.² Onset and duration of symptoms also are likely to have an impact, on duration of neurological recovery.

Intermittent Catheterization Difficulty Questionnaire(ICDQ), is a designed test to evaluate and quantify patients' difficulties during CISC(clean intermittent self catheterization).³ Thirteen items were chosen, concerning ease of catheter insertion and withdrawal, the presence of pain, limb spasticity, urethral sphincter spasms, and local urethral bleeding during catheterization. The frequency and intensity of these difficulties were scored. The comprehension, relevance, psychological and time consumption acceptance and face validity were evaluated. ICDQ can be taken as a valid test for the evaluation of catheter use and there is a good patients' acceptance for CISC.³

Adherence of successful intermittent catheterisation can be influenced negatively by increasing age.⁴ Studies emphasized that lubricated hydrophilic catheter is better than other catheters in the market. Hydrophilic catheters are less traumatic with minimal infection rate. For the patients' safety, the professionals need to acknowledge the importance of the appropriate use of lubricants and lubricated catheters to implement evidence-based practices that mobilise public policies. The use of evidences demonstrates that the appropriate use of lubricants for

intermittent urinary catheterisation is fundamental for patient safety and the performance of the best practices.^{5,6}

Conclusion

1. Intermittent self catheterisation is a safe, effective treatment and is associated with improved quality of life, although negative issues are reported.
2. Factors which determine adherence are largely the age and general physical condition of the patients.

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