



ORIGINAL RESEARCH PAPER

Urology

A COST EFFECTIVE MANAGEMENT OF NEUROGENIC AND STRESS URINARY INCONTINENCE IN FEMALE.

KEY WORDS: urinary incontinence, myofascial sling, inferior epigastric artery

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ABSTRACT	Introduction- Urinary incontinence is social, mental and financial trauma to patients. We have tried rectus myofascial sling for neurogenic as well stress incontinence patients.
	Matetrial and method – 18 female patients with urinary incontinence (15 neurogenic and 3 stress incontinence) were included in study. The rectus sling was harvested over inferior epigastric artery based pedicle. In the initial 6 cases rectus fascia was incorporated with muscle but in the last 12 cases we have utilized only the rectus muscle. 2 cm x 10 cm long rectus muscle was used.
	Results - Of the 18 patients operated, 15 patients were continent postoperatively. Of the 3 patients who were considered failures, 2 had <2 incontinent episodes during the day and one had 2 incontinence episode per day time . These 3 patients were continent during the night .

INTRODUCTION

The advent of newer pharmacotherapy and sling alternatives has revolutionized the management of urinary incontinence in females. Artificial genitourinary sphincters, tension free vaginal tapes, injectable polymers have all been used with varying success for neurogenic and stress incontinence. In third world countries with the non-availability of health insurance, the numbers of patients who can afford these costly therapies are limited. The low per capita income also limits the ability of patients to take pharmacotherapy on a long term basis. A cost effective and durable procedure is welcomed by these unfortunate patients who suffer physically, mentally and financially. Urethral sphincter dysfunction due to decreased outlet resistance is a common cause of incontinence. Pubovaginal sling procedures have shown excellent results in the treatment of incontinence in females. We report our experience of the rectus sling in the management of neurogenic and stress stress incontinence in 18 patients. In developing countries, this provides a viable, cost effective and simple technique that is easy to perform and that results in socially acceptable continence.

PATIENTS AND METHODS

Eighteen females with neurogenic and stress stress incontinence were treated by the rectus sling between January 2010 and January 2014 at our center. The age ranged from 8-30 (mean 19 years). The indication of surgery was failure to respond to pharmacotherapy in five patients 13 patients were operated as they wished to have a procedure that would make them free of pharmacotherapy. The choice for surgery in this group was due to unacceptable side effects in two patients (dry mouth) and financial constraints in 11 patients. Incontinence was due to neurogenic causes in fifteen patients and stress incontinence in three. A primary procedure for incontinence had been done in three patients. All these three patients had been operated per vaginally at peripheral centers but due to lack of available history the nature of the procedure executed cannot be specified. Preoperative evaluation consisted of renal function tests, ultrasonography, cystoscopy and voiding cystourethrogram, and all patients had stress leak point pressure <100cm H2O An infraumbilical midline or pfanasteil incision was used in all our patients. The patients were operated in epidural anesthesia to facilitate "wrap tension" around the bladder neck.. The bladder neck was dissected free after giving release incisions on the endopelvic fascia. By the help of a right angled forceps and with blunt dissection a plane was created between the bladder neck and anterior wall of the vagina. This plane was created to develop a space of two finger breaths. The rectus sling was then harvested over its vascular pedicle that is supplied by the inferior epigastric artery. In the initial 6 cases rectus

fascia was incorporated with muscle but in the last 12 cases we have utilized only the rectus muscle. We have found that by leaving the rectus fascia the adequacy of bladder neck suspension is not compromised and subsequent closure is easier with the rectus sheath. The length of the rectus muscle used was approximately 2 cm x 10 cm The rectus sheath was separated sharply from the underlying muscle by dividing the tendinous insertions of the rectus fascia. The muscle is plicated with No. 1 polyglactin sutures proximally in order to prevent bleeding from the free end that may at times be troublesome. The sling is then rotated on its base and passed below the vesicourethral junction between the bladder neck and vagina. Alternatively the bladders were filled with normal saline and the tension on the sling was adjusted till urine leaked We have used the wrap around technique in 3 patients but have found that the results are no different than the hitch up technique. The rectus muscle is then sutured to the periosteum of the inferior rami of the pubic bone by the help of 3-4 interrupted non-absorbable polydioxanone sutures. A urethral catheter is maintained and the abdomen is closed after placing a perivesical drain. The drains were removed after 48 hours and per urethral catheters were removed after 8-10 days. We did not place a suprapubic cystostomy any of our patients

RESULTS

In the present study follow-up periods ranged from 5-36 months , incontinence was defined as having no incontinent episodes during the day or night. The mean operating time was 100 minutes and an average of 150 cc of blood was lost during the operative procedure. Bleeding was mainly from the retropubic veins that ruptured during dissection of the vesicourethral junction. Only one patient required a blood transfusion in our series. Of the 18 patients operated, 15 patients were continent postoperatively. Of the 3 patients who were considered failures, 2 had <2 incontinent episodes during the day and one had 2 incontinence episode per day time . These 3 patients were continent during the night suggesting that they have some degree of stress incontinence. The patients were followed up by renal function tests, ultrasonography and voiding cystourethrogram. None of the patients showed any deterioration of renal function or resultant hydronephrosis due to the procedure.

DISCUSSION

The use of a myofascial sling was first described by Goebell for the management of incontinence due to myelomeningocele in two femalepatients [1]. While Goebell's technique utilized the pyramidalis muscle, Frangenheim utilized the rectus fascia for the first time in the management of incontinence [2]. Mingin GC et al [3] used the rectus myofascial sling in 37 patients in the

management of urethral incompetence. In 36 patients the cause of incontinence was a neurogenic bladder and one had sustained a traumatic injury to the bladder neck and urethra. Over a follow up of 0.5-10 years, 33 of the 37 (92%) patients were continent. Two male patients continued to have incontinence requiring bladder neck closure and creation of a continent stoma.

Kolligan ME et al [4] used the rectus myofascial wrap successfully in 6 patients. The indication for wrap procedure in their series was cloaca' exostrophy (2), female epispadias (2), classic bladder exostrophy (1), male epispadias (1), myelomeningocele (1) and a pelvic tumor (1). They advocate the use of rectus sling in a very difficult population of pediatric patients. Gosalbez R Jr et al [5] treated 30 (24 females and 6 males) myelodysplastic children with rectus fascia sling. The age of the patients ranged from 4-20 years (mean 10). They studied various urodynamic criteria for indicating the rectus sling for the management of incontinence. Their inclusion criteria included passive leak point pressure <50 cm H2O, stress leak point pressure of <100 cm H2O, radiological evidence of an open bladder neck and the presence of stress incontinence. Augmentation cystoplasty was performed concomitantly in 20 patients. Patient follow up ranged from 2-70 months (mean 37.6). Twenty-eight patients (93%) were continent postoperatively.

Dik P et al [6] used the rectus sling transvaginally for the treatment of neurogenic incontinence in 24 girls. Of the 24 patients 19 were dry after the transvaginal sling suspension and 3 others required concomitant bulking agent injections. They concluded that transvaginal sling suspension using the rectus abdominis is safe, relatively easy to perform and cost effective. The rectus sling has also been effective in the treatment of males with neurogenic and stress incontinence, Nguyen IIF et al [7] evaluated seven boys. 7 to 19 years of age, of whom four were postpubertal. They concluded that rectus fascial sling is effective for increasing bladder outlet resistance and decreasing the degree of incontinence in prepubertal and postpubertal males with neurogenic sphincter incontinence.

Barthold is et al [8] reported less convincing results of the rectus sling. Of a total of 27 patients treated an overall success rate of only 36% was found. In failed cases the authors achieved continence by periurethral collagen injection and artificial genitourinary sphincter placement. Successful outcome of rectus sling has been reported by numerous authors [9-11].

The artificial genitourinary sphincter has been used successfully in the management of sphincter incontinence in both males and females [12, 14, 15,] The device has been shown to be useful in the management of incontinence in children and young adults [13 15 16]. The chief drawbacks of the artificial sphincter have been mechanical failure and infection. These complications may sometimes warrant removal of the device. Patients who are not covered by health insurance policies may not be able to afford these costly implants. Cost of treatment in third world countries seems to be the prime reason for the low acceptance of artificial genitourinary sphincter in the treatment of incontinence.

Urethral lengthening procedures like the Kropp procedure [17,18], Tanagho reconstruction [19] and Pippi- Salle [20] bladder neck repair have been used with success for the management of sphincter incontinence. These procedures require extensive bladder neck reconstruction and experience for providing optimal results.

The present series has studied the use of rectus abdominis sling for the management of incontinence in females. Of the 18 patients operated 15 became continent (83.33%). The successful outcome is in concurrence with results reported in other studies. The patients are kept on a follow-up protocol of clean intermittent catheterizations that depends on the bladder capacity. On an average, patients perform CIC 5-6 times a day. In the present study, follow up has ranged from 5-36 months. During this period there was no deterioration in renal function or development of hydronephrosis in any of the patients. The use of native tissue is not associated with inherent complications as mechanical failure

as with the artificial genitourinary sphincter. The chances of urethral erosion, as has been seen with artificial slings as Gore-Tex are minimal if proper tension is applied during the vesicourethral wrap.

CONCLUSION

Rectus myofascial sling is effective in neurogenic and stress incontinence patients with no cost on material. It can help patients in developing country with poor economical status. it is autologous so not immunoreactive and no issue regarding steralisation and infection.

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