Evaluation of Augmentation Cystoplasty Procedures Used in Ain Shams University during Ten Years Duration

Thesis

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Khaled Gomaa Mohammed

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List of Abbreviations

AUS : Artificial Urinary Sphincter.

CBC : Complete blood Picture.

CISC : Clean Intermittent Self Catherization.

DNA : Deoxyribonucleic acid.

DTPA : Di ethyl tetra pentyl acetic acid.

ESRD : End Stage Renal Disease.

GFR : Glomerular Filtration Rate.

H-D Syndrome: Hematuria Dysuria Syndrome.

HN : Hydronephrosis.

IVU : Intravenous Urogram.

MRI : Magnetic Resonance Imaging.

MRU : Magnetic Resonance Urogram.

NGVD : Neurogenic Bladder Dysfunction.

PGA : Poly glycolic acid.

PUV : Posterior Urethral Valve.

List of Abbreviations (Cont.)

SBO : Small Bowel Obstruction.

US : Ultra Sound.

UTI : Urinary Tract Infection.

VCUG : Voiding Cystourethrogram.

VURD : Vesico ureteral Reflux, dysplastic kidney.

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Abstract

The main concerns in the management of significant anatomical or functional urinary tract abnormalities in the pediatric age group is to preserve the renal functions followed by offering a socially accepted continence or dry status and lastly the future of the child as an adult regarding the sexual and reproductive abilities.

Augmentation cystoplasty is indicated for treatment of low bladder compliance and reduced bladder capacity secondary to infectious, inflammatory, neurogenic and congenital disorders.

The aim of present thesis was to evaluate the results of augmentation cystoplasty techniques as a treatment of hypocompliant bladder and the most common complication arising.

Twenty cases were chosen for this study, within pediatric age group. The cases were chosen according to some inclusion & exclusion criteria.

Ileocystoplasty was by far the most commonly used operative modality.

Long term follow up is still needed to judge the complications of the techniques used in this study.

The results were discussed and confronted with those of previous investigators.

Key words: augmentation cystoplasty, Neurogenic Bladder, Vesico ureteral Reflux, Urodynamics.

Introduction

Augmentation ilecystoplasty was first described in the dog by tizzoni and foggi in 1888 and in man by von miculicz in 1889. However it was not often used until the 1950s, when couvelaire popularized it for the treatment of the small contracted tuberculous bladder (**Greenwell et al., 2001**).

Currently augmentation cystoplasty is indicated for treatment of low bladder compliance and reduced bladder capacity secondary to infectious، inflammatory، neurogenic and congenital disorders **(Duel et al., 1998).**

Many surgeons had carried out augmentation for many reasons using different types of tissue. The ideal augmentation material would be autologous، lined by transitional cell epithelium، with contractile ability and elasticity **(Churchill et al., 1993).**

Most of the segments of the gastrointestinal tract have been used for augmentation cystoplasty **(Churchill et al., 1993).** Traditional augmentation cystoplasty using gastrointestinal segments is known to be associated with metabolic abnormalities، stone formation and alterations in the bladder causing potential carcinogenesis **(Mathoera et al., 2000).**

De-epithelization of the bowel segment to avoid the incorporation of gastrointestinal mucosa in the urinary tract is tried in animal models and in humans using chemical,

enzymatic and argon laser with satisfactory primary results **(Demirbilek et al., 2001).**

Bladder augmentation using a ureteric segment was popularized as a mean to achieve increased low pressure bladder capacity using native urothelium **(Churchill et al., 1993).** This method is practically applicable only to patients with unilateral hydroureteronephrosis with an ipsilateral nonfunctioning kidney (**Greenwell et al., 2001**), or in the presence of bilateral hydroureteronephrosis by using the distal ends of both ureters for augmentation with bilateral ureteric reimplantation **(kilciler et al., 2000),** or by doing transureteroureterostomy and augmentation using the distal part of one ureter **(Churchill et al., 1993).**

Autoaugmentation or detrusor myotomy was proposed as available alternative when a small increase in capacity and compliance is required **(Cartwrigh et al., 1989).**

Current interest and research is directed towards the use of bladder acellular matrix graft as an alternative with early reports of promising results in animal models **(Probst et al., 2000).**

Aim of the Work

The aim of present thesis is to evaluate the results of augmentation cystoplasty as a treatment of hypocompliant bladder in children in pediatric surgery department Ain Shams University during the ten years period from 2003 till 2013.

Chapter 1
History of Augmentation Cystoplasty

The main concerns in the management of significant anatomical or functional urinary tract abnormalities in the pediatric age group is to preserve the renal functions followed by offering a socially accepted continence or dry status and lastly the future of the child as an adult regarding the sexual and reproductive abilities **(Biers et al.,2012)**.

A small-capacity, high-pressure, poorly complaint or unstable bladders will cause either deterioration of the upper tract or a social problem regarding continence or both **(Luis et al., 2014).**

Many patients with small-capacity, high pressure, poorly compliant or unstable bladders will be managed successfully with pharmacological or other conservative measure **(Greenwell et al., 2001)**. A small but significant minority of these patients will require surgical intervention aiming at providing urinary storage whilst preserving renal function, continence, resistance to infection and convenient voluntary and complete emptying **(Biers et al., 2012).**

Augmentation ileocystoplasty was first described in the dog by Tizzoni in 1888 by connecting a loop of ileum to the bladder neck and in man by von Mikulicz in 1889 **(Sountoulides et al., 2009).**

During the late nineteenth and early twentieth centuries there were multiple attempts at bladder substitution, usually involving some form of rectal pouch. Unfortunately, in the pre-antibiotic era results in humans tend to be poor, tempering enthusiasm for these procedures **(Biers et al., 2012).** During the 1950s interest in bladder augmentation was renewed when Couvelaire popularized it for the treatment of the small contracted bladder of tuberculosis. Initial results were poor because the procedures were performed before the era of successful anti-tuberculous chemotherapy. Couvelaire stressed on the importance of resecting the bladder with retention of the trigone because of its sensory function **(Figueiredo et al., 2006).** Kuss in 1959 and Gil-Vernet in 1960s stressed the protection afforded to the upper tract by the ileo-cecal valve if the ureters were implanted into the ileal tail **(Basic et al., 2007).**

During the subsequent decades the use of these procedures increased rapidly as the technical aspects of these surgeries were defined. Many surgeons have carried out augmentation for many reasons, using many different types of tissue **(Greenwell et al., 2001)**. Virtually all segments of the gastrointestinal tract have been used successfully in augmentation cystoplasty **(Escudero et al., 2011)** which was supported by two important events, the first is the introduction of clean intermittent self catheterization (**CISC**) as a way to evacuate the bladder in 1972 by **Lapides (Lapides et al., 1972)**, and the second is the principle of detubularization. **Hinmann** in 1988 has described the advantages of detubularization and reconfiguration of the