



# Improvisation in lower urinary tract endourology: Colworths experience

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## ABSTRACT

**Introduction:** Lower urinary tract endourology is very rapidly advancing in the developed countries, but the reverse is the case in the developing countries where the cost of setting up and purchase of consumables are very expensive.

**Aim:** To encourage the use of locally available materials as improvisation to perform the surgeries.

**Patients and methods:** A prospective study of all endourological procedures carried out at Colworths medical center between November 2012 and June 2017. Information obtained includes age, gender, diagnosis, procedure, duration of surgery, prostate size and complications were analyzed. Improvised materials include ordinary television set, drip stand, kitchen sieve, water dispenser and feeding bottle, mobile phone and selfie stick.

**Results:** During the study, 206 endoscopic procedures were performed on 103 patients with age range of 3 to 89 years with mean age of 66.99. There were 98 males and 5 females. Initial cystoscopies were performed for all the 103 patients. 53 transurethral resection of the prostate (TURP), 5 transurethral resection of the bladder tumour, 19 direct vision internal urethrotomy (DVIU), 15 channelization of the prostate, 2 bladder clot evacuations, 1 double J stent insertions and 1 bladder neck incision were all performed.

One case of DVIU was abandoned due to bleeding and two cases of DVIU stopped due to false passage. There was however no mortality.

**Conclusion:** Lower urinary tract endourology is regularly performed despite the hitches in replacing consumables and damaged instruments. The use of locally available materials to improvise has enabled the procedure to proceed with satisfactory results.

## INTRODUCTION

Improvisation is the activity of making or doing something not planned beforehand, using whatever can be found [1]. Materials which can be used for lower urinary tract endoscopy include but not limited to drip stand, kitchen sieve, feeding bottle. Surgeries which were carried out endoscopically were TURP,

DVIU, bladder neck incisions and clot evacuations. Endoscopic procedures in urology entails the visualization of the urethra, prostate, bladder ureter and the renal pelvis. The urinary tract is divided into upper and lower parts. The renal pelvis down to the ureteric orifice make up the upper tract while bladder down to the urethra make up the lower tract.

The regular practice of endourology in the developing countries is gradually increasing however it is still on the decline compared to the western or developed countries. Since the invention of the solid rod-lens system and the fiber optic light source by H.H. Hopkins in 1959, the level of practice has increased from simple diagnostic procedures to more complex therapeutic applications [2]. This advancement in technology has enabled the urologist to reach all corners of the urinary tract using the endoscopes [3]. Over the last 50 years endourology has revolutionized urological practices worldwide. This is not so in many urological centers in West Africa [4].

## AIM

This study was carried out with improvised materials and to demonstrate that such materials could be safely used for endoscopic lower urinary tract procedures. Study was carried out in Colworths medical center, a urologybased hospital.

## PATIENTS AND METHODS

Between November 2012 and June 2015, a prospective study of all endourological procedures were performed at Colworths medical center. Both informed and written consents were obtained from all the patients. The patients were carefully chosen after confirmation of diagnosis following clinical, radiological and laboratory evaluations. Information obtained include age, gender, diagnosis, procedure, duration of

surgery, prostate size and complications were analyzed. The Improvised materials included but not restricted to ordinary television set, drip stand, kitchen sieve, water dispenser and feeding bottle. Endoscopic equipment include all sizes of paediatric scopes, cystoscopes of all sizes, nephroscopes, ureteroscopes, stone punches, urethrotomes. Some of the procedures were done with the C arm fluoroscopic guidance. The choice of the anaesthesia was subarachnoid block. Monitoring was done using automated patient monitor with functions for ECG, SPO2, BP, HR, PR, and a well fitted alarm system. An automated defibrillator was on hand for emergency and patient urine output was monitored Postoperative care was uneventful for most of the patients but for few who needed close attention.

## RESULTS

During the study, 206 endoscopic procedures were performed on 103 patients with age range of 3 to 89 years with mean age of 66.99. There were 98 males and 5 females as seen in figures1 and 2. Initial cystoscopies were performed for all the 103 patients. 53 transurethral resection of the prostate (TURP), 5 transurethral resection of the bladder tumour, 19 direct vision internal urethrotomy (DVIU), 15 channelization of the prostate, 2 bladder clot evacuations, 1 double J stent insertions and 1 bladder neck incision were all performed as seen in figures3 and 4.

One case of DVIU was abandoned due to bleeding and two cases of DVIU stopped due to false passage. There was however no mortality.

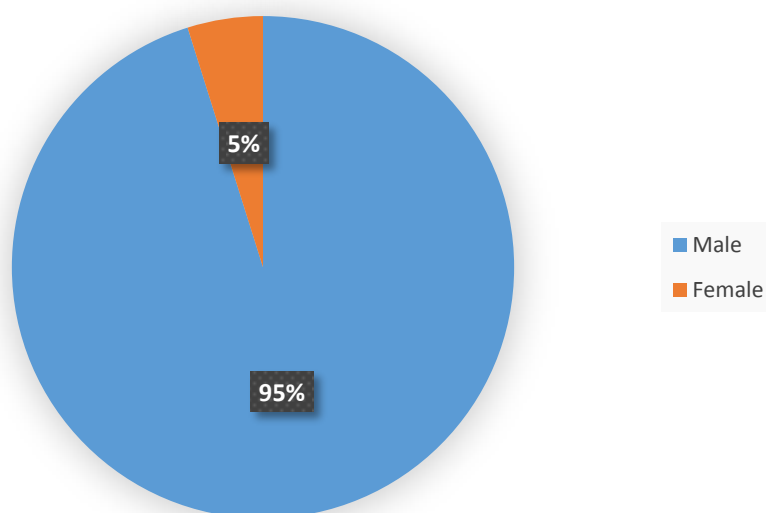


Fig 1: Pie Chart showing proportions of male to Female Study Participants

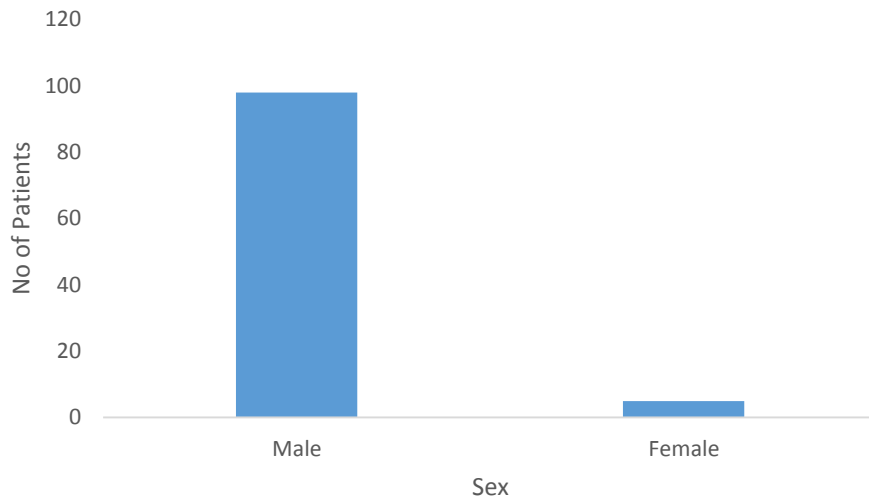


Fig 2: Bar chart showing the number of Male and female patient participants

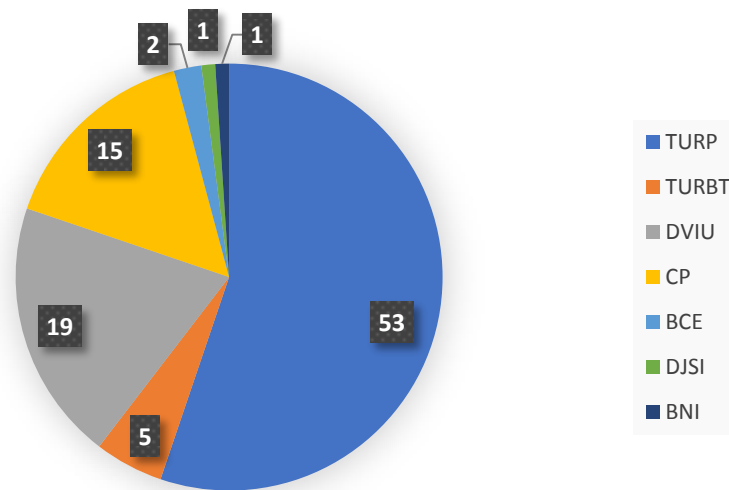


Fig 3: Pie chart showing the ratio of different procedures carried out on the study participants

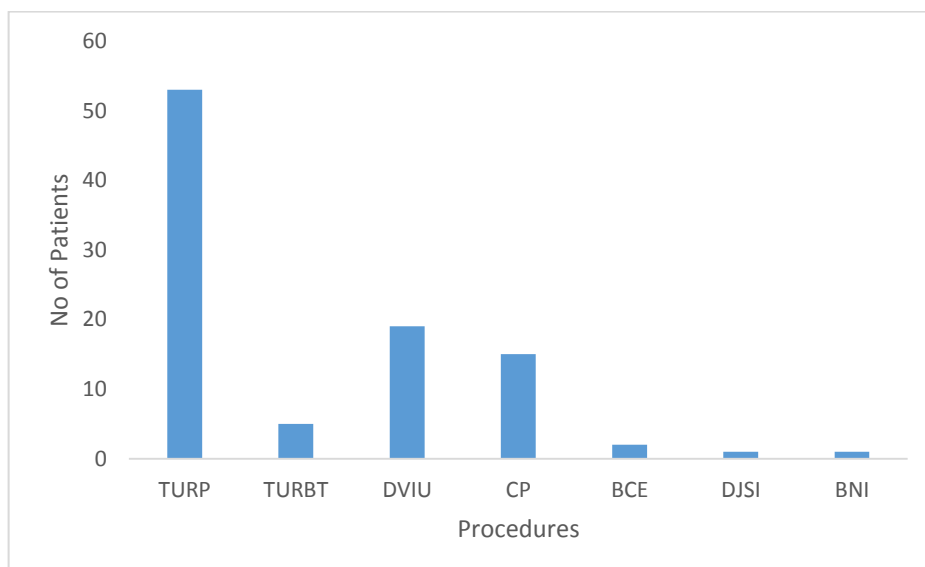


Fig 4: Bar Chart showing the number of participants with the different procedures carried out on them.

**KEY:**

TURP = transurethral resection of the prostate  
 TURBT = transurethral resection of the bladder tumour  
 DVIU = Direct vision internal urethrotomy  
 CP = Channelization of the prostate  
 BCE = Bladder clot evacuations  
 DJSI = Double J Stent insertions  
 BNI = Bladder neck incision

**DISCUSSIONS:** Philip Bazzini, a German army surgeon, invented the first instrument to visualize the inside of a human body in 1806. He named this device the Lichtieter. A candle and angled mirrors within the device would enable a surgeon to see inside a body cavity. The device was originally intended to view the pharynx, but it was quickly adapted to view the inside of the penis and urethra [5]. This was the catalyst for further experimentation and innovation of endoscopic instruments. Maximilian Carl-Friedrich Nitze and Joseph Leiter developed the first true working cystoscope in 1878. From that point on, there has been constant innovation and development that has led to the instruments which urologists use today [6]. Materials improvised for the lower urinary tract endoscopy include not restricted to ordinary television set, drip stand, kitchen sieve, water dispenser and feeding bottle. Hysteroscopic scissors was improvised in the treatment of PUV because of the cost of laser machines, the after effect of diathermy cauterization and the avulsive effect of foley catheter. The valves are neatly incised and excised at the 5 and 7 O'clock positions with satisfactory outcomes [7]. Endoscopic surgeries are quite easy, fast, safe and cheap after the setup of equipment as the life span can be prolonged with careful handling of instruments. Urethrocystoscopy is one of the most precise diagnostic investigations in evaluation of lower urinary tract symptoms and most of the procedure is done with the rigid cystoscopes in our poor setting environment. Cystourethroscopy with a small calibre flexible fiberscope under topical lignocaine poses less discomfort to the patient than the rigid [8]. The only challenge is the initial cost of setting a dedicated endoscopy centre, training challenges can easily be

surmountable with patience dedication and setting priorities right [9].

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