LICH-GREGOIR VERSUS COHEN REIMPLANTATIONS IN MANAGEMENT OF BILATERAL VESICOUERETRAL REFLUX

Adnan Mutter & Ahmed Hussain
MBChB,FICMS(Urology) MBChB,FICMS(Urology)
Department Of Urology-AL Zahra Teaching Hospital.

دراسه مقارنه بين طريقة ليش-جريجور وطريقة كوهين لعلاج الرجوع البولي الاولي

عدنان مطير & احمد حسين - مستشفى الزهراء

الخلاصه

الخلفيه:
مقارنة نتائج عمليات علاج الرجوع البولي الاولي بطريقة ليش جريجور وطريقة كوهين

الطريقه:
ثلاثون طفلا كانو يعانون من الرجوع البولي الاولي من الدرجه الثالثه والرابعه والخامسه ، احريت لهم عملية زرع الحالب في مستشفى الكوت العام من تموز٢٠٠٣ حتى تموز٢٠٠٩ اربعة عشرة منهم بطريقة ليش جريجور وستة عشر بطريقة كوهين.

النتائج:
ثلاث مرضى ٢١% من اربعة عشر مريضا بطريقة ليش جريجورانتهو بفشل احادي.بينما مريضان ١٢%من ستة عشر مريضا بطريقة كوهين اصيبو بتضيق نهاية الحالب ومريض واحد٦% انتهى بفشل احادي.

الاستنتاجات:
عملية ليش جريجور هي عملية مساوية النتائج اوقد تكون افضل مقارنة بعملية كوهين من حيث النتائج والمضاعفات وفترة الرقود .

ABSTRACT

Purposes and background:
We compare the result of Lich-Gregoir versus Cohen reimplantations in management of primary vesicoureteral reflux (VUR).

Material and Methods:
Thirty child with bilateral primary vesicoureteral reflux (VUR), grade III, IV and V, underwent surgery in AL-KUT general hospital from July 2003 until July 2009, 14 patients with Lich-Gregoir and 16 patient with Cohen reimplantation.

Results:
Three (21%) of 14 patients with Lich-Gregoir end with unilateral failure (recurrence of reflux) and 2 (14%) patients with recurrent urinary tract infection for 4 months with the short hospitalization (average 4 days), while 16 patients with

Cohen, one (6%) patient develop unilateral failure , two(12%) patients end with ureterovesical stenosis, three (19%) patients with urine leak for one month, and recurrent urinary tract infection persist in 5 (31%) patients for 6 months, with long hospitalization (average 10 days).

Conclusion:
We conclude that Lich-Gregoir was equal or better than Cohen in treatment of primary vesicoureteral reflux with lower incidence of morbidity and short hospitalization.
Keywords: Vesicoureteral reflux VUR, Lich-Gregoir, and Cohen.

Introduction:

Vesicoureteral reflux (VUR) is one of the most common problems encountered by pediatric urologists. The overall incidence of VUR in the general pediatric population is estimated to be approximately 1% [1]. However, the prevalence of reflux varies significantly based on age, gender, race and bladder dynamics. The female-male ratio in children is approximately 3-4:1 [2].

VUR is the retrograde flow of urine from the bladder into the ureter. Primary VUR in children is frequently attributed to an abnormally short intravesical tunnel at the ureterovesical junction, the more severe the abnormality, the worse the VUR, secondary VUR occurs when reflux is induced by abnormally increased bladder pressures, such as those seen with urethral obstruction or neurogenic bladder dysfunction [3].

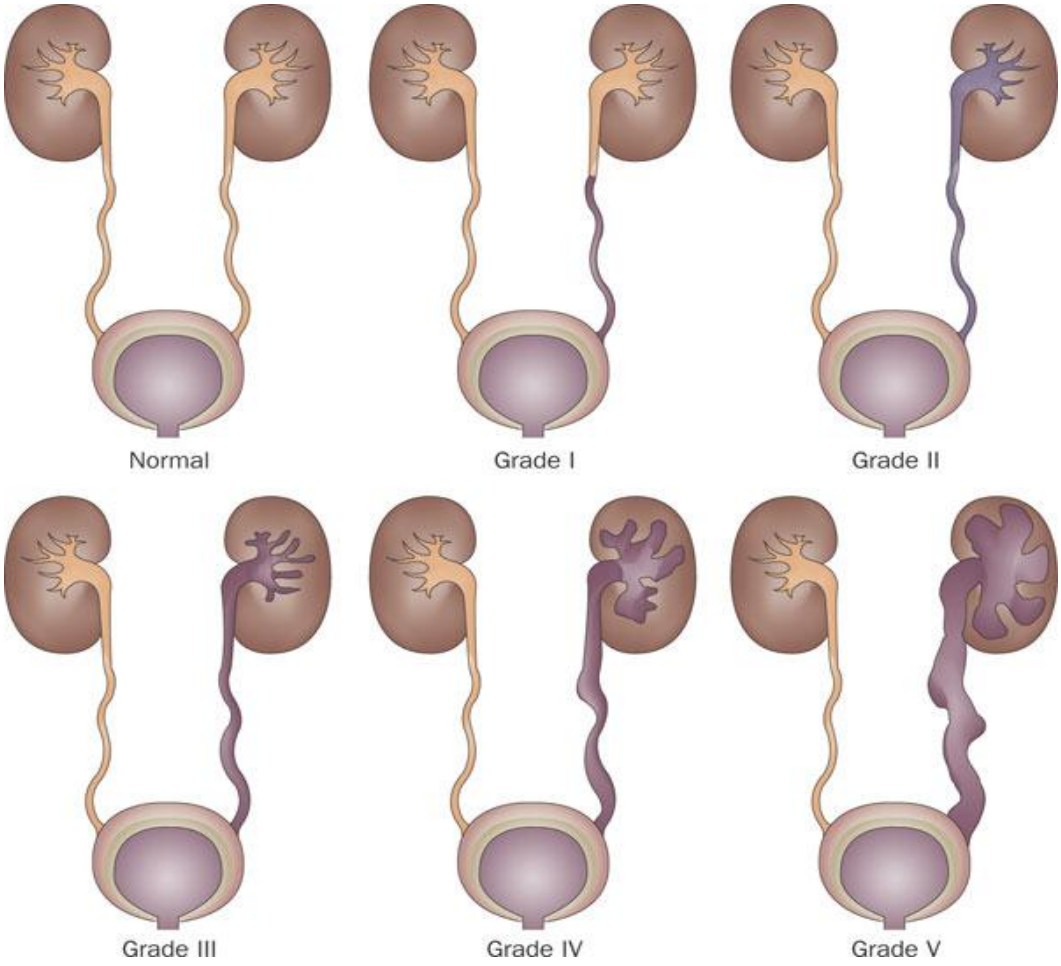
VUR is associated with 7–17% of children diagnosed with end-stage renal disease worldwide [4]. An estimated 30–40% of children under the age of 5 years who develop a urinary tract infection have VUR [5]. Children with VUR and concomitant urinary tract infections are at an increased risk of developing renal scarring compared to children without VUR suffering with urinary tract infections. In the International Reflux Study, 50% of children with VUR grades III or IV had scars at study entry [6]. Several studies have demonstrated a direct correlation between increased prevalence of renal scarring and higher grades of VUR [7].

VUR is diagnosed by cystourethrogram, reflux is then graded as follows based on the height and effects of the VUR. **(Figure 1)** [8].

- Grade I: VUR enters just the portion of the ureter closest to the bladder. The ureter appears normal in size.
- Grade II: VUR enters the entire ureter and goes up into the collecting system of the kidney. The ureter and the collecting system appear normal in size and structure.

- Grade III: VUR enters the entire ureter and kidney collecting system. Either the ureter or the collecting system is abnormal in size or shape.
- Grade IV: Similar to grade III, but the ureter is greatly enlarged.
- Grade V: Similar to grade IV, but the ureter is also abnormally twisted/curved, and the collecting system is greatly enlarged, with absence of the usual structural details.

Figure (1): International Reflux Grading System



Treatment depends on the grade that is diagnosed. In grades I and II, the usual treatment involves long-term use of a small daily dose of antibiotics to prevent the development of infections[9]. The urine is tested regularly to make sure that no infection occurs. The kidneys are evaluated regularly via ultrasound and VCUG (every 12 to 18 months) to make sure that they are growing normally and that no new scarring has occurred[10]. About 80% of children with grades I and II VUR simply grow out of the problem, as they grow, the ureter lengthens, changing its angle of entry into the bladder and resolving the reflux. The average age of VUR resolution is about six to seven years [11].

About 50% of children with grade III VUR require surgery, nearly all children with grades IV and V VUR require surgery. In these cases, it is usually best to perform surgery when the patient is relatively young, in order to avoid damage and scarring to the kidneys [1].
The surgical treatment of VUR has evolved over the past 50 years, while multiple different techniques for ureteral re-implantation have been performed, most fall under one of two main categories: intravesical and extravesical surgery. In intravesical the bladder is opened and the ureters are dissected intravesically. The Tanago, 1970 principle of repair VUR include free up enough extra-vesical ureter so that an intravesical segment 2.5cm long can be formed, place the intravesical ureter in submucosal position and suture the wall of the new ureteral orifice to the cut edge of trigonal muscle. There are many procedures satisfy this principle with the high success rate includes Politano-Leadbetter 1958, Paquin1959, Hutch 1963, Glenn and Andrson 1967 and Cohen 1975 [2].

While in extravesical re-implantation where the ureters are dissected away from the bladder wall without opening the bladder and are left attached to the bladder mucosa and re-implanted under flaps of bladder muscle (Lich-Gregoir) achieve good result and can be done laprascopically with high success rate [12]. There is no clear documentation of any of the multiple techniques being superior to the others in terms of VUR resolution [13].

Patients and Methods:

Thirty patients with bilateral primary vesicoureteral reflux, grad III, IV and V were operated on in AL-KUT general hospital from July 2003 to July 2009. Patients age from 3 months – 4 years, 18 male and 12 female, all patients presented with recurrent UTI and failure to thrive. Voiding cystourethrogram (VCUG) were done for all of them, ultrasound, intravenous pyelogram, urinalysis and culture, blood urea nitrogen and hemoglobin level. Three patients with grad III, 23 patients with grade IV, and 4 patients with grade V. Figure (2)

Cohen methods were done in 16 patients, (12 grades III and 4 grades IV), which is intravesical approach where the bladder opened and the ureter is drown into a new tunnel which crosses over the opposite side of the bladder with the stenting of both ureters and folly catheter with the retropubic drainage for 10 days hospitalization.

Lich-Gregoir methods were done in 14 patients,(3 grade III, and 11grade IV), which is extravesical approach where the ureters are dissected away from the bladder wall without opening the bladder and are left attached to the bladder mucosa and re-implanted under flaps of bladder muscle, without stenting of ureters, but with the folly catheter removed after five days. **Figure (3)**

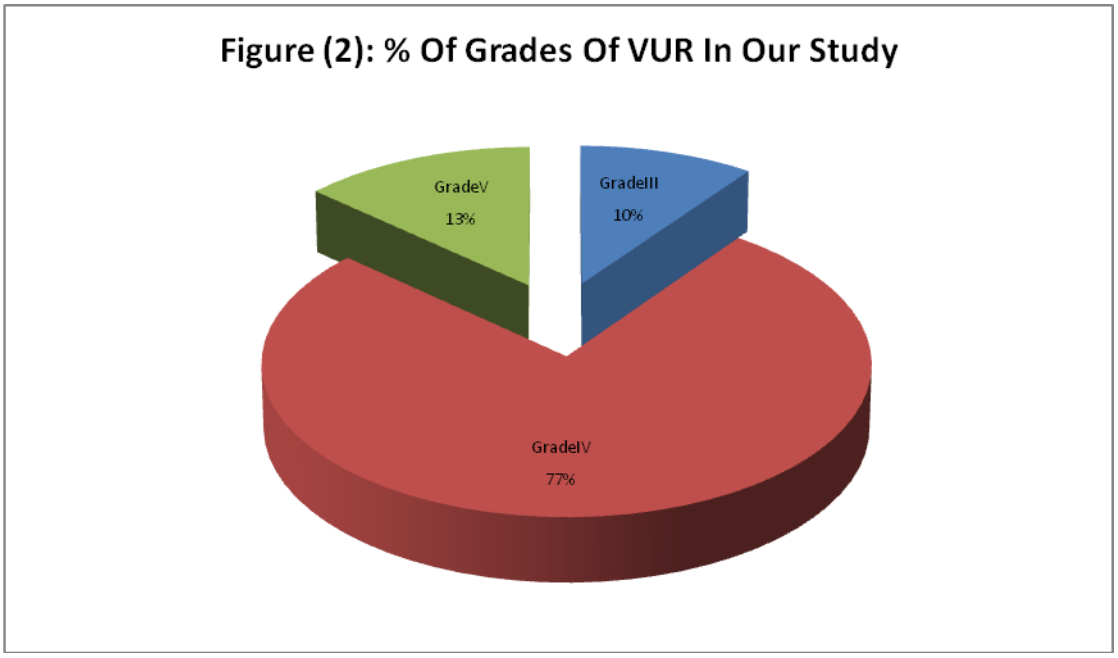
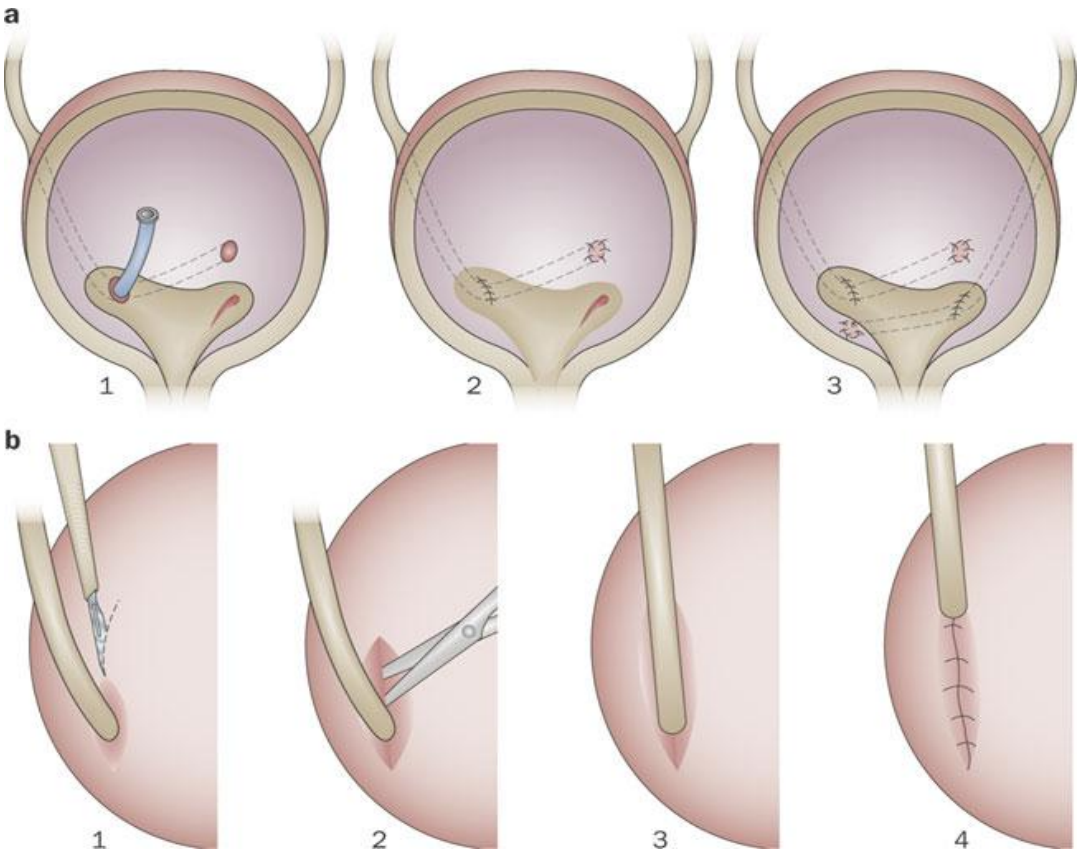


Figure (3): COHEN (a) and LICH-GREGOIR (b) reimplantation techniques for correction of vesicoureteral reflux



Results:

Three (21%) of 14 patients with Lich-Gregoir end with unilateral failure (recurrence of reflux) and 2 (14%) patients with recurrent urinary tract infection for 4 months with the short hospitalization (average 4 days), while 16 patients with Cohen, one (6%) patient develop unilateral failure , two(12%) patients end with ureterovesical stenosis, three (19%) patients with temporary fistula for one month, and recurrent urinary tract infection persist in 5 (31%) patients for 6 months, with long hospitalization (average 10 days). Figure (4)

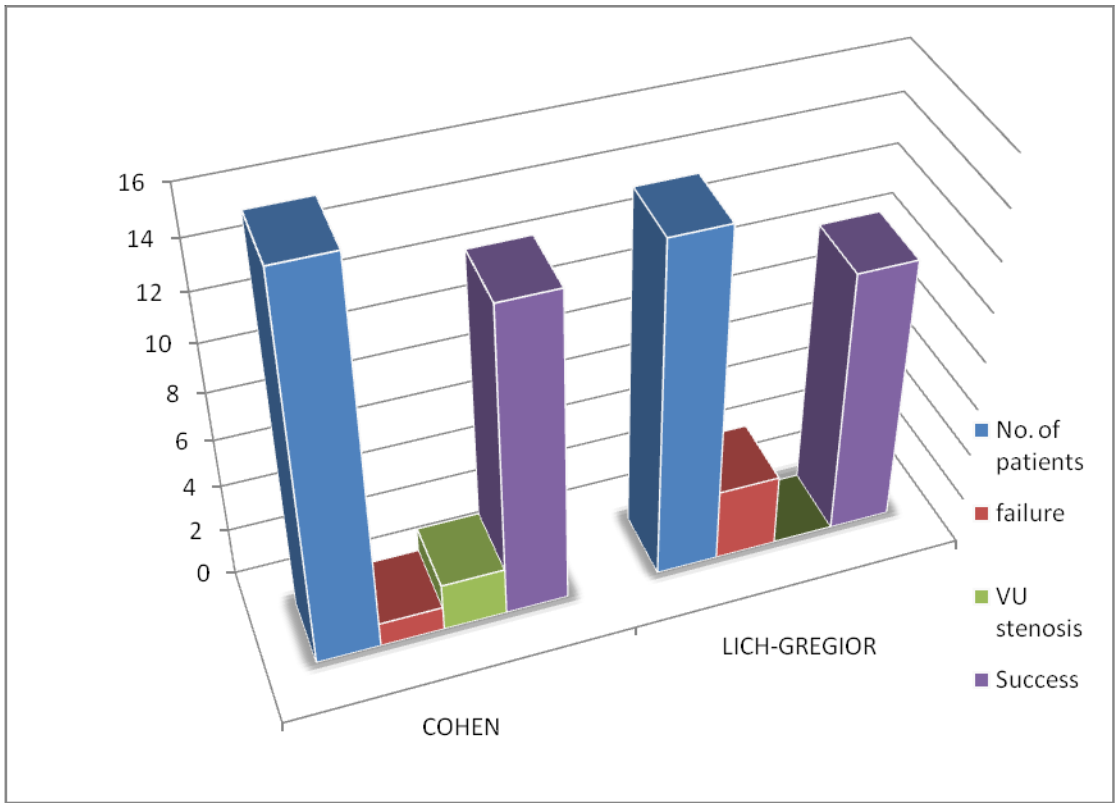


Figure (4): Outcome of Our Study.

Discussions:

Critical evaluation and treatment of vesicoureteral reflux (VUR) has raised significant questions regarding all aspects of vesicoureteral reflux (VUR) management. Whereas the standard of care of antibiotic prophylaxis for any child with VUR, several studies have attempted to evaluate the efficacy of antibiotic prophylaxis in children with VUR [11,14,15,16,17]. These studies failed to show a significant reduction in acute pyelonephritis or renal scars in children with VUR being treated with antibiotic prophylaxis. Craig, J. C.et al, Montini, G.*et al* and Pennesi, M. *et al* actually demonstrated an increase in antibiotic-resistant bacteria causing the urinary tract infections [4,18,19,20,21] Chesney, R. W.et al,

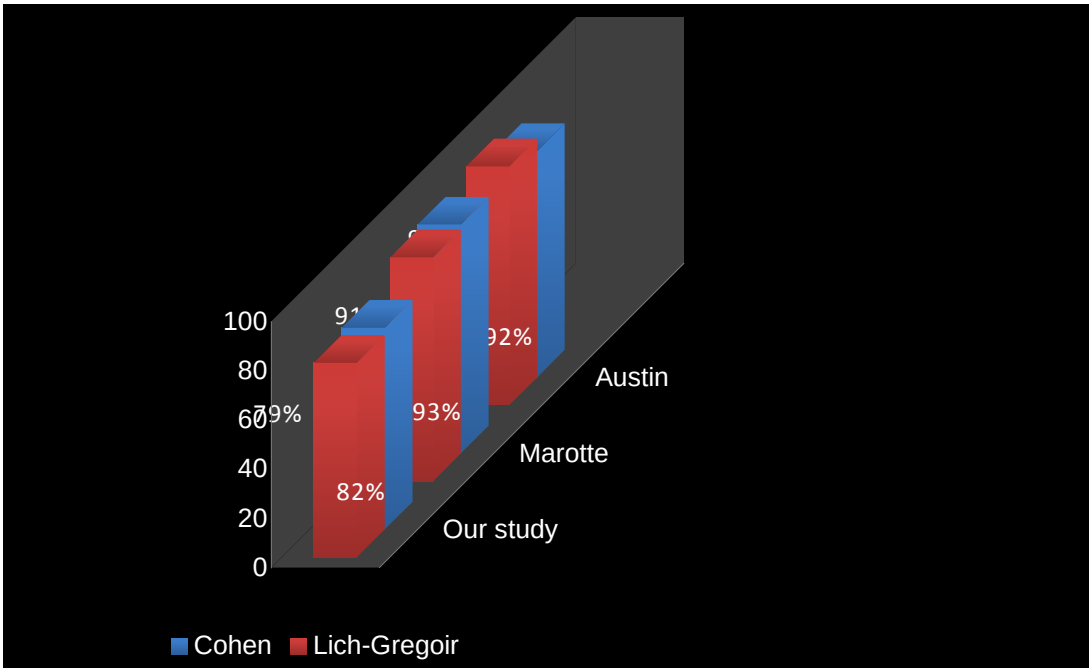
demonstrate a trial of randomized prospective study, as prophylactic, trimethoprim–sulfamethoxazole for children aged 2–72 months diagnosed with grade I–IV VUR after a first or second UTI could help which children benefit from antibiotic prophylaxis [22]. Until yet, it is unclear which children if any truly benefit from antibiotic prophylaxis.

Studies with longer follow-up demonstrate decreased efficacy of endoscopic therapy that was previously hoped to approach the success of ureteroneocystostomy[23,24,25,26]. Operative surgery still one of the treatment in many children with vesicoureteral reflux. Up till now researches of many years standing into the operative treatment of VUR have not yielded fully satisfying results [27]. In spite of working out several dozen operative methods, no body has found as yet a solution which would fully restore the anatomical structure and functional efficiency of the insufficient vesicoureteral junction. In treating VUR, the operations described by Lich-Gregoir, and Cohen are the most widely used and yield the best results [8,10].

In our study we compare those two operations, and we found that the open Cohen procedure has the advantages of correcting high grade of bilateral reflux in one session easily, and suitable for younger children, disadvantage of Cohen reimplantations is difficult retrograde ureteral intervention due to the orientation of the neo-ureteral orifices, long hospitalization, more time for urinary diversion, temporary urinary leakage, urine not sterile for long period postoperativly and risk of vesicoureterl junction stenosis. Extravesical open Lich-Gregoir technique has the advantage of not entering the bladder, no need for stenting, reduced postoperative bladder spasm, hematuria, shorter days of urinary diversion and ease of catheterization. Disadvantage of Lich-Gregoir, are not suitable for high grade reflux in younger children because of the technical difficulties encountered with the thin bladder wall for creation of a new tunnel and risk of recurrence.

Researches show that about 93% of patients show no reflux after surgery, about 3% develop ureterovesical stenosis and at least 75% have sterile urine without antimicrobial drugs 3-6 months after surgery [9]. Marotte study show complete resolution of the vesicoureteral reflux was achieved in 91% of renal units that underwent Lich-Gregoir reimplantations, and the excellent complete resolution rate (93%) was also noted in patients who underwent Cohen [12]. Austin shows success rate 92% with Cohen and 97% with Lich-Gregoir [9]. In our study the success rate was defined as absence of VUR and stenosis of ureterovesical junction, throughout the follow-up, were 79% in Lich-Gregoir, and 82% in Cohen (80% in total), unilateral failure occur in 3 (10%) patients from 30 patients, 2 (14%) with Lich-Gregoir and one (6%) with the Cohen Ureterovesical Stenosis occurs in two (12%) patients with Cohen, and 7 (23%) patients from 30 have non sterile urine for at least 4-6 months after surgery, 2 (14%) patients with recurrent urinary tract infection with Lich-Gregoir for 4 months and 5 (31%) patients with Cohen for 6 months. **Figure (5)**

Figure (5): Comparison of Our Study with Other Study.



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