Ureteral Reimplant: Experience over a 15-year period at the Hospital General de México

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ABSTRACT

Ureteral reimplant is a routine procedure in urology services as well as in pediatric surgery.

Objective: To evaluate results of this procedure carried out over a period of 15 years at the Hospital General de México.

Materials and methods: A retrospective study of case records from the Hospital General de México of patients who underwent ureteral reimplant between July 1992 and July 2007 was carried out. A total of 142 cases were reviewed. Of those cases 22 were men and 120 were women.

Results: Eighty-four patients had lesion on the left side, 51 on the right side and 7 patients had bilateral lesions. In 102 patients the procedure was secondary to gynecological complications, in 18 patients it was secondary to ureteral lesion from urologic endoscopic procedures and in 12 it was secondary to genitourinary tuberculosis. In 6 patients reimplant was due to reflux disease and in 3 it was due to injury to the ureter with a firearm.

Discussion: Politano-Leadbetter is a technique that has grown in popularity over the last 3 decades and it was the procedure of choice. The results of the present study had a success rate of 89.4% which was comparable to that of a study with a 30-year follow-up protocol that had a success rate of 92.3%.

Key words: ureteral reimplant, Politano-Leadbetter, Mexico.

RESUMEN

El reimplante ureteral es un procedimiento que se practica de manera sistemática tanto por servicios de urología como de cirugía pediátrica.

Objetivo: Realizar una evaluación de los resultados obtenidos en 15 años en el Hospital General de México.

Material y métodos: Se realizó un estudio retrospectivo de expedientes clínicos del Hospital General de México de pacientes sometidos a reimplante ureteral entre julio de 1992 y julio de 2007. En total se reunieron 142 casos: 22 varones y 120 mujeres.

Resultados: Con lesión del lado izquierdo se identificaron 84 casos y del derecho 51; la lesión bilateral se reconoció en siete. En 102 pacientes se realizó una intervención secundaria a una complicación ginecológica; en 18 pacientes se realizó una intervención secundaria a una complicación ginecológica; en 18 por lesión ureteral mediante procedimiento urológico endoscópico, en 12 por tuberculosis genitourinaria, seis por enfermedad de refluo y tres por lesión de arma de fuego al uréter.

Discusión: La técnica de Politano-Leadbetter, con aceptación creciente en las últimas tres décadas, fue el procedimiento de elección. En un estudio con seguimiento de 30 años mediante esta técnica se obtuvo un éxito de 92.3%, una cifra comparable a los resultados del presente estudio, cuya tasa de éxito fue de 89.4%.

Palabras clave: reimplante ureteral, Politano-Leadbetter, México.

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INTRODUCTION
Ureteral reimplant is a routine procedure in urologic as well as pediatric surgery. The large majority of surgeries are successful. However, there are cases in which technical difficulties or bladder or ureteral anatomical abnormalities interfere with surgical success. Ureteral lesions secondary to gynecological surgery occur in 0.5-2.5% of cases and approximately 90% of these lesions involve the pelvic ureter and 10% involve the abdominal ureter.\(^1\) The majority of ureteral injuries and ureterovesical fistulas are caused by abdominal hysterectomy with indices of 2-3% and 0.6%, respectively.\(^2\) Various techniques have been described for performing ureteral reimplant surgery. Three basic objectives of these procedures when employing antireflux technique are: mobilization of the injured ureter, creation of an intravesical tunnel and tension-free ureterovesical anastomosis.\(^3-5\) Double-J catheter placement is recommended to avoid complications of tension at the anastomosis site, anastomosis stricture and bending of the ureter. However, some studies have suggested that routine double-J ureteral catheter placement is not necessary in patients at low risk for complications. Presently there are no guidelines for long-term follow-up protocol of the upper urinary tract that monitor hydronephrosis, kidney cicatrization or changes in kidney size.

OBJECTIVE
The purpose of the present study was to determine results obtained at the Hospital General de México over the past 15 years in ureteral reimplant procedures performed in the urology service. Technique employed, surgical motive and long-term results were taken into account based on a study published in 2000 by Soria et al.\(^6\)

MATERIALS AND METHODS
A retrospective study of case records of patients from the Hospital General de México who had undergone ureteral reimplant between July 1992 and July 2007 was carried out. From a total of 142 patients, 22 were men and 120 were women. Study inclusion criteria were complete case record, adult patient and fulfillment of follow-up criteria. Exclusion criteria were kidney transplant patients, incomplete imaging follow-up, upper third ureteral injury and children. Ureteral reimplant surgical techniques were Politianno-Leadbetter, Lich-Gregoir, Paquin, ureteroureteral anastomosis, Boari, ileal interposition and Cohen, all of which have been described in the international literature.\(^7-9\) Double-J ureteral catheter was placed in the reimplanted ureter and was removed at a mean 28 days by cystoscopy with no evidence of complications. Postoperative follow-up at day 15 was carried out and then every three months during the first year with urinalysis and urine culture as well as excretory urography and ultrasonography up to 18 months. A descriptive analysis of data was carried out.

RESULTS
A total of 142 complete case records meeting inclusion requirements within established study timeline were compiled. Of those patients, 84 had left side injury, 51 right side injury and 7 had bilateral injury. Ages ranged from 19-74 years. Ureteral reimplant secondary to gynecological complication was performed in 103 patients, 18 reimplants were secondary to urological endoscopic ureteral injury, 12 were secondary to genitourinary tuberculosis, 6 for reflux disease and 3 for gunshot wound to the ureter. Of the gynecological procedures resulting in ureteral injury, 72 were abdominal hysterectomies, 16 were hysterectomy plus bilateral salpingo-oophorectomy, 6 were vaginal hysterectomy and 3 were bilateral salpingo-oophorectomy, all performed in the gynecological service of the Hospital General de México.
Politano-Leadbetter technique was employed in 104 procedures, ureteroureteral anastomosis in 10, Lich-Gregoir technique in 8, Boari technique in 6, Paquin technique in 5, ileal interposition in 5 and Cohen technique in 4 (Image 1). The principal complications were urine drainage leak in 51 patients, significant postoperative pain in 33 and fever in 15 (Image 2). Procedure was successful in 127 cases. Repeat surgery was necessary in 13 cases. Nephrostomy catheter placement was necessary in 2 cases secondary to severe hydronephrosis documented by kidney ultrasonogram with nephrostomy removal at mean 64 days and no hydronephrosis apparent in control studies.

**DISCUSSION**

Good vascular supply, complete resection of pathological lesions, adequate drainage and a large area free from ureteral and bladder mucosa anastomosis tension continue to be of utmost importance for successful surgery. Ureteral injury management is usually complicated by a delay in diagnosis and unspecific presentation of symptoms such as abdominal pain, nausea or fever. Today, ureteral reimplants may be performed by a number of techniques with an approximate success rate reported in the literature of 95%.10,11 Lich-Gregoir is a technique reported to have low morbidity and a high success rate that has been widely accepted in the urological community.12 The Politano-Leadbetter technique has increased in popularity over the last 3 decades and was the procedure of choice in the present study. A study using this technique and having a 30-year follow-up protocol reported a success rate of 92.3%, comparable to the present study with a success rate of 89.4%.11 In the present series, ureteral reimplant was performed due to surgical trauma from obstetric and gynecologic surgery in 71.83% of patients compared with endoscopic urologic procedures in 12.67%, non-surgical disease lesions in 12.67% and gunshot wound in 2.11%. There were urine drainage leaks in 35.91% of cases which was very high compared with series that reported leakage in 4.5% of cases.12,13 Imaging studies are routinely used to evaluate surgical procedures, including ureteral reimplant. In the present study, micturating cystourethrography showed reflux in 2 patients at 3 months with no evidence of changes in serum creatinine levels or hydrenephrosis. Success rate in the present study was 98.62% compared with 99.3% success rate reported in the literature.14-17 According to certain protocols, micturating cystourethrography need not be carried out on asymptomatic patients with normal ultrasonography studies. However, micturating cystourethrography is still indicated in patients presenting with fever, urinary tract infection and recurrent cystitis.18 Abdominal ultrasonogram as part of follow-up protocol was carried out for one year primarily to evaluate hydrenephrosis associated with the procedure. There are studies suggesting that follow-up after one year in ureteral reimplant cases is not necessary. In the present study, 1 year was chosen arbitrarily but that length of time appears to be a reasonable one for observing the possible development of urologic pathology.17 Surgical ureteral injury may be a complication in 10-30% of radical hysterectomies, 1.5-2.5% of all gynecological procedures, 3.7% of abdominoperineal resections, 0.1% of cesarean sections and 0.5% of endoscopic urologic procedures.6,19,20

**CONCLUSIONS**

A total of 142 ureteral reimplant procedures were performed in the urology service of the authors, 71% of which were secondary to injury during gynecological surgery. Reimplant success rate was comparable to that found in the international literature demonstrating that the Hospital General de México is a good training center for residents in reconstructive urologic procedures due to the large number of cases that present. However, laparoscopic techniques for this type of procedure need to be incorporated since minimally invasive surgery has yet to be performed at this hospital.

**Image 2.** Postoperative complications
BIBLIOGRAPHY