Ureterocalicostomy for Reconstruction of Complicated Ureteropelvic Junction Obstruction

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Abstract

Objective : To review our experience with ureterocalicostomy using the treatment of complicated ureteropelvic junction (UPJ) obstruction.

Material and Method : Medical records of all patients with complicated ureteropelvic junction obstruction treated by ureterocalicostomy from 1985 to 2000 were reviewed. Causes of UPJ obstruction, surgical techniques, peri-operative course and outcome were noted.

Results : Fifteen patients were enrolled in this study (6 males and 9 females) with the mean age of 39 years old (28-45). Twelve patients were after stone surgery, 2 were after pyeloplasty for congenital UPJ obstruction and one patient was after blunt abdominal trauma. All the procedures were done by flank incision. After excision of the lower pole, the ureter was anastomosed to the lower caliceal mucosa without tension over an internal stent. Nephrostomy tubes were used in all of the patients. The mean hospital stay was 14 days (10-20). Twelve cases (80%) were found to be successful and are still doing well with the mean follow-up time of 2.5 years (0.5-12). Three patients (20%) were found to have failed, and subsequently nephrectomy was done in one case and permanent nephrostomy was used in 2 cases due to a solitary kidney.

Conclusion : Ureterocalicostomy is one of the options for treatment of complicated UPJ obstruction that can provide good drainage as well as excellent long term results.

Key word : Ureteropelvic Junction Obstruction, Ureterocalicostomy

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Ureterocalicostomy has been reported as the alternative treatment of complicated ureteropelvic junction (UPJ) obstruction[1]. This operation was described in 1947 by Neuwirt as the secondary procedure rather than nephrectomy, interposition of bowel segment and autotransplantation in unusually difficult cases of peripelvic fibrosis[2]. The technique is useful in patients who have had multiple operations for renal calculi in whom a stricture at the ureteropelvic junction subsequently develops or in those who have had failed pyeloplasties, especially when dealing with a solitary kidney[2]. Due to the infrequency of its indication, no extensive reported series was found in literature. Herein, we report our experience with 15 ureterocalicostomies with long term follow-up.

MATERIAL AND METHOD

From 1985 to 2000, 15 ureterocalicostomies were performed at the Division of Urology, Department of Surgery, Ramathibodi Hospital. All of the medical records were reviewed concerning causes of UPJ strictures, surgical treatment, peri-operative course, and outcome. Mail and phone were used for the recent condition of the patients.

RESULTS

The group comprised of 6 males and 9 females, ranging in age from 28-45 years (mean 39). In 12 patients the UPJ obstruction was related to previous surgery for stone disease, 2 were after failed pyeloplasty of congenital UPJ obstruction and 1 after blunt abdominal trauma in which UPJ disruption was delayed in diagnosis. Of the twelve cases who had UPJ obstruction after stone surgery, all of them were referred from rural hospitals and stone surgery had been done by general surgeons. Nephrostomy tubes were placed prior to the ureterocalicostomy. In all patients the diagnosis of obstruction was based on a history of previous operations, history of flank pain of declining renal function and a combination of antegrade, retrograde and/or intravenous pyelography. (Fig. 1 and 2) Renal scan was used in the cases who had kidney deterioration. Eight cases (7 after stone surgery and 1 after failed pyeloplasty) had a solitary kidney due to delayed management of UPJ obstruction of the contralateral kidney. All of the operations were done by flank incision. After renal parenchyma was excised at the lower pole until lower caliceal mucosa was approached, the ureter was anastomosed to the lower calyx over an internal

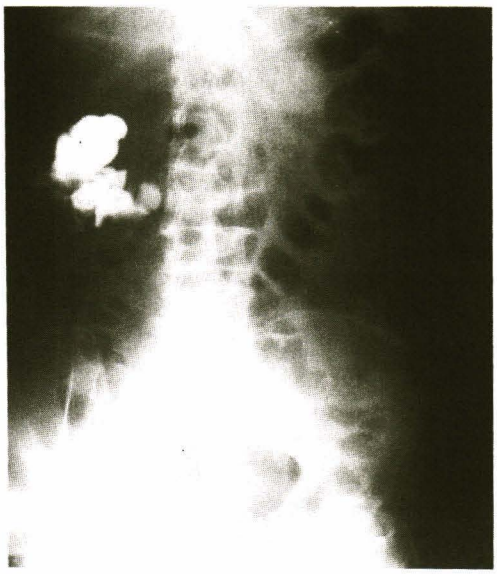

Fig. 1. Shows pre-operative antegrade pyelogram. Completed UPJ obstruction is noted.

Fig. 2. Shows pre-operative retrograde pyelogram, completed UPJ obstruction and retained stones in lower pole are noted.

stent. Additional drainage by nephrostomy tube was used in all of the cases (Fig. 3A, B, C). Internal stent was removed 4-6 weeks after operation and nephrostomy tubes were removed after demonstration of patency of the anastomotic site by antegrade pyelography. (Fig. 4) Hospital stays ranged from 10-20 days (mean 14). Three cases (20%) were found to have failed ureterocalicostomies and subsequent nephrectomy was done in 1 case and permanent nephrostomy was used in another 2 cases due to a solitary kidney. At the mean follow-up time of 2.5 years (range 0.5- 12 years), no renal failure was noted. All of the 12 cases with successful ureterocalicostomy still had stable renal function except two cases who had expired with unrelated conditions. No recurrent stricture was found.

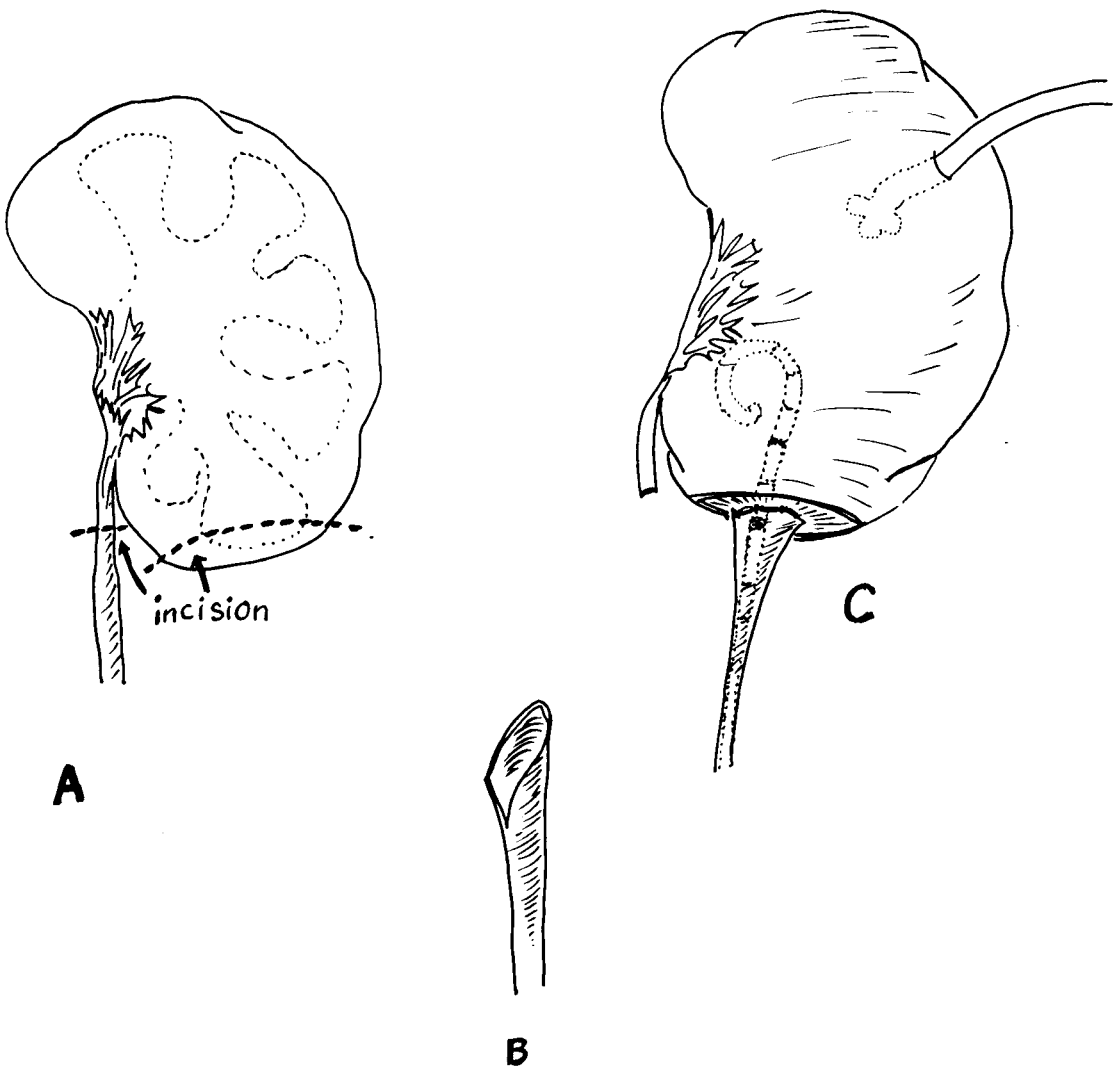

Fig. 3A, B, C Shows surgical technique.

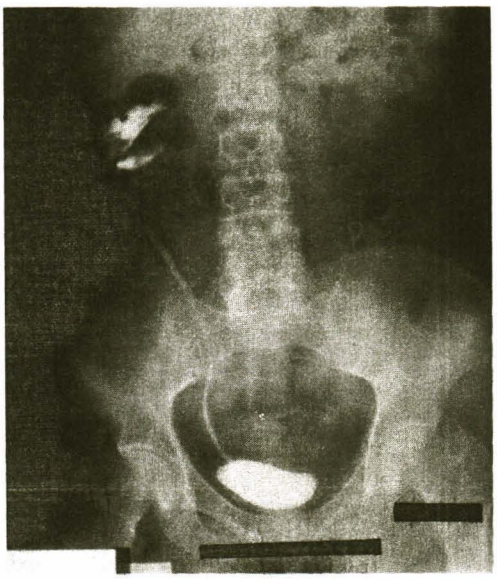

Fig. 4. Shows antegrade pyelogram at 2 months after operation. Internal stent has already been removed and patency of anastomosis is shown.

DISCUSSION

Ureterocalicostomy is an infrequently performed operation. The indication is to reconstruct a complicated UPJ obstruction. Neuwirt described the first ureterocalicostomy in 1947 and since then the accepted indication for this operation has been to manage the following stricture formation after pyelolithotomy, failed pyeloplasty, UPJ obstruction with malrotation of the kidney, trauma with UPJ disruption and stenosis due to tuberculosis[1-3].

Other alternatives that are available to manage complicated stricture at UPJ are nephrectomy, replacement of the ureter with a segment of bowel, or autotransplantation[4]. All of these operations have disadvantages. Permanent nephrostomy poses a threat to the kidneys due to bacteriuria and recurrent urinary tract infection or stone formation [5]. Replacement of the ureter with a segment of bowel can be complicated due to its difficult technique, persistent bacteriuria and mucous formation [5]. Autotransplantation is difficult to perform due to fibrosis around the renal hilum and kindly vascularization can not be provided[4]. Ureterocalicostomy has several advantages because of the lower rate of bacteriuria, no effect in the case of elevated creatinine and better drainage than using bowel segment[1-3]. The technique consists of resecting the parenchyma adequately to expose the lower calyx. The ureter is spatulated and the anastomosis is performed without tension. Ureteric stent and nephrostomy tube are recommended[1-3]. The ureteric stent can be removed in 4-6 weeks and nephrostomy tube can be removed after patency of the anastomosis is obtained[3]. The major complication is stricture of the anastomosis mostly from inadequate parenchymal resection at the lower pole of the kidney or the anastomosis was done with tension[6]. Urinary and fecal fistulas have also been reported[6]. Hawthorn reported a 72 per cent success rate of this operation but most of the failed cases were earlier cases[3]. The authors reported an 80 per cent success rate that seems higher than other reported[3] series because of the careful surgical technique, rigid adherence to the principle or removal of cortical tissue from the uretrocaliceal anastomosis.

SUMMARY

Ureterocalicostomy is a procedure for treating complicated or extensive peripelvic fibrosis when conventional pyeloplasty can not be performed. When the technical guidelines are followed, the operation can be performed with a satisfactory success rate.

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การผ่าตัดแก้ไขกรวยไตตีบตันด้วยวิธียูรีทีโรแคลิโคสโตมีย์

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วัตถุประสงค์ : เพื่อศึกษาถึงผลของการผ่าตัด ureterocalicostomy ในการรักษากรวยไตตีบตัน

วัสดุและวิธีการ : ศึกษาย้อนหลังจากเวชระเบียนผู้ป่วยตั้งแต่ พ.ศ. 2528-2543 โดยศึกษาถึงสาเหตุของการตีบ วิธีการวินิจฉัย วิธีการผ่าตัด ผลของการผ่าตัดและการติดตามผล

ผลของการศึกษา : มีผู้ป่วยทั้งสิ้นจำนวน 15 ราย อายุเฉลี่ย 39 ปี (28-45) เป็นชาย 6 รายและหญิง 9 ราย ผู้ป่วย 12 ราย ส่งต่อมาจากต่างจังหวัดหลังผ่าตัดรักษานิ่วในไตโดยศัลยแพทย์ทั่วไปและมีอาการแทรกซ้อนกรวยไตตีบ ผู้ป่วย 2 รายเกิดการตีบตันของกรวยไตหลังการผ่าตัดแก้ไขกรวยไตตีบแต่กำเนิดและอีก 1 รายเกิดหลังประสบอุบัติเหตุกรวยไตฉีกขาดไม่สามารถตรวจพบได้ในชั้นต้น การผ่าตัดทำผ่านทางแผลบริเวณสีข้างหลังจากตัดขั้วล่างของไตแล้วจึงนำหลอดไตมาต่อกับ calyx ล่าง คาสายสวนหลอดไตไว้ 4-6 สัปดาห์และมีสายระบายปัสสาวะจากไต (nephrostomy) จนกว่าฉีดสารทึบรังสีพบว่ารอยต่อติดและปัสสาวะไหลผ่านได้โดยสะดวก หลังติดตามผลพบว่าการผ่าตัดประสบความสำเร็จ 12 รายคิดเป็นร้อยละ 80 ซึ่งหลังจากติดตามมาเฉลี่ย 2.5 ปี (0.5-12) ไตยังคงทำงานได้ดีอยู่เช่นเดิม ส่วน 3 รายที่ไม่ประสบความสำเร็จนั้นได้ตัดไตออก 1 รายและคาสายระบายจากไตเป็นการถาวรอีก 2 รายเพราะเหลือไตเพียงไตเดียว

สรุป : การผ่าตัด ureterocalicostomy เป็นทางเลือกหนึ่งในการรักษากรวยไตตีบตันที่มีผังผืดมาก ผลการรักษาในระยะสั้นและระยะยาวดีหากสามารถทำผ่าตัดสำเร็จ

คำสำคัญ : กรวยไตตีบตัน, การผ่าตัดแก้ไข

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