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URETERAL STENT ENCRUSTATION

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Palliative ureteral stent placement is effective in relieving obstructive renal impairment, especially that precedent to malignant spreading, and can take the place of surgical intervention. Furthermore, cutaneous antegrade and/or endoscopic retrograde stenting can be indicated for other pyelo-ureteric operations and prevent their complications, but it has its consequences: We experienced three cases in which stenting had to be repeated because of its obstruction. The stent catheter blockage is discussed.

Key words: Ureteral stent, Complication

INTRODUCTION

With the advances in medical technology and increased concern on humanity in medicine, the number of cases of urinary tract obstruction which if dissolved, could improve the quality of the patient's life are increasing. Whether renal function is impaired or not by extrarenal disorders is a matter of life or death.

Retrograde and/or antegrade ureteral stenting now tend to supersede surgical procedures which may involve risk and complications[1]. Recently, we performed ureteral introductions for ureteral obstructions with double J stent (Medical Engineering Corp., 3037, Mt. Peasant St., Racine, Wisc., U.S.A.) by retrograde route, on 17 patients who had malignant tumors and 1 patient who had benign disease; and, it was successful in 15 patients. We usually added another big hole for better drainage near the proximal curvature. But, 3 of the patients were transferred for anuria, and we had to reinsert the stent though the initial insertion was successful.

Though we know there are noticeable problems on ureteral stenting, we prefer the ureteral stenting to surgery.

Case 1.

A 64-year-old woman who had received radical hysterectomy and irradiation two years ago for cervix cancer Ⅲ B, was hospitalized with anuria. Excretory urogram demonstrated moderate hydronephrosis in the right kidney, but there was no functioning in the left for four months. Only successful right stent resumed urine outflow immediately, and the patient lost 8 kg during the following two days. On the third day of hospitalization, the patient was stricken again with anuria. The lower third of the withdrawn catheter contained mucous material, and hemorrhagic cystitis was observed cystoscopically. Replacement of stent was successful before the patient left the hospital. Left-sided catheterization can fail to pass through.

Case 2.

A 37-year-old female was diagnosed three years ago as having stage Ⅱ cancer of cervix. She was treated with radical hysterectomy and radiation therapy. She had no detectable tumor recurrence postoperatively except mild bilateral hydronephrosis.

Sudden onset of anuria with azotemia forced her to be hospitalized. Double-J stent was placed easily in the right side, but not in the other side. The patient become thinner losing 9 kg in the following two days. She suffered anuria on the fourth day. Removed ureteral stent had gelatinous debris in the lower third. Mucosae of the bladder base showed massive hyperemia with bullous edema. As the

stent was functioning, care on hydration and infection was performed to prevent the same inconvenience after reinsertion of the stent.

Case 3.

A 68-year-old man underwent cutaneous colostomy for advanced rectosigmoid cancer three months ago and has since been receiving immunotherapy while in hospital. Acute event of anuria, and fever with chill had obligated him to try catheterization, because he had normal volume of urine till then. Although the stent brought on sufficient outflow of urine, it became obstructed by an unknown cause on the second day. A 4 F whistle tip ureteral catheter used instead of the double pigtail stent, drained well despite annoying flush irrigation of the lumen several times during three weeks of chemotherapy the next effective restenting.

DISCUSSION

Since Brown and Harrison[2] reported the facilities of plastic for ureteral catheterism, various kinds of ureteral catheters have been devised and ameliorated to indwell[3~5]. The ureteral stenting is more reasonable and ideal than surgical diversion in rescuing merely the urinary outflow from the collecting system.

If there is a choice between the stent and surgical diversion, many clinical investigators, nowadays, prefer the former. There are many cases of stenting required for hydronephrosis, especially preceding extrinsic factors of malignant disease[1,6], involved in urological patients.

Singh and his associates[7], however, showed 20% blockage of the stent as a complication in its use. Gerber and Narayana[8], on the other hand, described two cases of difficulties; stent dysfunction. This is a clinical problem awaiting solution.

Singh et al. did not note the cause of stent blockage in detail, and Gerber could not detect the cause in his two cases.

In two of the cases we experienced, the cause of difficulty was identified as the presence of mucoid materials inside the lower third of the stents, and vesical mucosae became hemorrhagic in both.

In the third case, the patient who had suffered from severe pyelonephritis, maintained urine outflow and physically returned to normal only by stenting, which resulted in flush irrigation onto the whistle tip ureteral catheter several times till replacement.

Only previously reported cases revealed anuria in our series, and we can suggest that they are attributable to some factors of infection to make occlusion respectively. And, we have to recognize that patent stent is confirmed by reflux on cystogram[4,8].

Furthermore, some authors[9,10] have suggested that strikingly severe ureteral reaction to ureteral intubation may occur.

In addition, we have often experienced obstruction by fibrin clots in peritoneal dialysis in which larger multiple holes are provided on the peritoneal catheter than in the ureteral stent. This phenomenon has occurred at the initial stage of dialysis, and subtle peritoneal infection.

On the basis of our experience, most of the causes for encrustations were considered to be blood clots, mucoid materials as exudative protein from upper urinary tract infection and ureteral reaction, and fibrinoids from hemorrhagic cystitis.

Our experience indicate that the previously mentioned problems cannot be resolved based on the size and number of holes of the stent.

In predicting results of stent occlusion, reinstillation in a retrograde manner may be avoided in the patient who has severe upper urinary tract infection, and pyeloureteric reconstruction should be used if successful placement is to be achieved.

It would be a clear-cut advantage to employ a long sized silicone ureteral stent[5] with a single pigtail as nephrostomy and ureteral sprinting, which can be flushed out, and changed easily to short double pigtail stent afterwards[10~12].

And, irrespective of grade and cause of uretural obstruction, and complication of the catheter itself, it is, at first, desirable and better to provide merely the

ureteral stent to make the pathway, to avoid permanent-urinary diversion surgically, so far as we recognize. In fact, we experienced many other cases of satisfactory stent placement without any sign of failure.

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和文抄録

Ureteral Stent Encrustation

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尿管狭窄に対するステントカテーテルの留置は腎機能の保全に有効である．とくに，悪性腫瘍にともなう尿路閉塞症例では外科的尿路変更術の代用法として十分にその機能を示す．しかし，ステントカテーテル留置中に問題がないわけではない．合併症，副作用の中でもわれわれが経験した3例のステントカテーテル閉塞は感染および出血によるものであった．ステントカテーテル閉塞の原因および問題点について文献的考察とともに検討した．