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THE USE OF INFANT FEEDING TUBE AS A COMBINED NEPHROSTOMY AND STENT IN ANDERSON-HYNES PYELOPLASTY

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ABSTRACT

Objective: To demonstrate the usefulness of a small size nasogastric tube as a combined nephrostomy tube and stent in Anderson-Hyne Pyeloplasty.

Method: Size 6 FG nasogastric tube with two holes made at the midportion, was used in each of 10 consecutive patients who had Anderson-Hypes dismembered pyeloplasty. The distal portion served as stent while the middle perforated portion was situated in the renal pelvis. Through a separate stab wound at the lateral abdominal wall the rest of the tube was brought out. The single tube then served as both a nephrostomy and a splint to the repair.

Result: In 9(90%) out of 10 patients, the tube drained significant urine post operatively. When removed six to twelve days later there was no urinary fistula in any of the patients.

Key Words: Pyeloplasty, infant feeding tube, nephrostomy, stent. *(Accepted 14 August 2006)*

INTRODUCTION

Congenital ureteropelvic junction obstruction is caused by an aperistaltic upper end of the ureter. The definite pathology has been variously explained by the presence of abnormal longitudinal muscles[1], fibrous stricture[2] or kinks and valves from infolded ureteral mucosa[3] at the junction between the renal pelvis and the ureter. The clinical manifestation of obstruction at the ureteropelvic junction may begin at various ages from in-utero to old age[4]. The presence of symptoms, evidence of renal impairment and/or its presence in a solitary kidney remain indication for operative intervention to correct the anomally and protect the kidney from further deterioration. Flap based pyeloplasties were the first to be introduced for the correction of ureteropelvic junction obstruction[5,6]. However, none of the flap based procedures was universally applicable to the various anatomical configurations of this anomally. J.C. Anderson and Wilfred Hynes described a dismembered pyeloplasty in 1949[7]. Their procedure, which was a variant of the one described earlier the same year by Nesbit[8], has found a generally universal application in most types of congenital ureteropelvic junction obstruction. Dismembered pyeloplasty allows for the excision of the functionally abnormal segment, reduction of redundant pelvis where it exists and transposition of the ureteropelvic junction when an aberrant lower pole renal artery is present. The first Anderson-Hynes pyelopasty, Which was done in a patient with a retrocaval ureter, was not splinted. However, with subsequent experiences, the need for splinting of the repair and urinary diversion become apparent and advocacy for their use was made[9]. Even though successful repairs of ureteropelvic junction have been accomplished without stents or diversion[10], there use in children[11, 12] and in complicated cases, as in emergency situation[13], has been generally agreed upon. Nephrostomy diverts the urine and minimizes urinary extravasation, which is a cause of peri-ureteral fibrosis, a condition which could perpetuate the obstruction and lead to recurrence of symptoms. It protects the repair especially in early postoperative period when edema at the anastomosis may cause obstruction to urine flow. Stents ensure stability of the repair, allowing undisrupted healing. Both stent and nephrostomy give the surgeon a measure of control of the operative site as drainage from the tube may indicate the situation within the kidney and antegrade pyelography can be performed through it if indicated. The essence of this paper is not to enter into the controversy for the use or non-use of nephrostomy and stent but to demonstrate that a small size nasogastric tube can be adapted to serve both purposes for those surgeons who find indications for their use.

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MATERIALS AND METHOD

Ten consecutive patients requiring Anderson-Hyne dismembered pyeloplasty for primary hydronephrosis at the University of Benin Teaching Hospital between 1994 and 2000, all had infant feeding tube as combined nephrostomy and stent. The patients were aged between 13 and 40 years (mean 25.8 SD23.5) six were females while 4 were males. Each had ureteropelvic junction obstruction confirmed by intravenous urography. Each kidney was approached laterally by an oblique incision through the bed of the 12th rib. The ureter was first identified and dissected upwards to the renal pelvis. The pelvis and upper ureter was cleaned of the surrounding fat and fibrous tissue. Three stay sutures to mark the portion of the ureter and the pelvis to be excised were placed. The ureter was transected below the narrow segment, and spatulated. A spout of an equivalent length was created in the most dependent part of the pelvis and the redundant pelvis was excised. The posterior leaves of the spatulated ureter and the pelvic spout were first anastomosed with a continuous 4-0 chromic catgut suture with a small round bodied needle. The anastomosis was suspended at this point. A sterile size 6 FG nasogastric tube (infant feeding tube) was perforated in 2 places 2cm apart near the mid portion using the belly of a pair of curved McIndoes Scissors. The tube was passed through a separate stab wound in the lateral abdominal wall. The position chosen was such that it avoided the patient lying on it in the supine position. A pair of number 1 artery forceps with its jaws locked was passed through the open renal pelvis into a laterally situated calyx. With a gentle pressure this forceps was made to pierce through renal tissue until its tip showed beneath the renal capsule. A careful cut down on the tip of the forceps completed the nephrotomy. The blades of the forceps were gently opened to grasp the tip of the feeding tube pulling it through the renal pelvis into the wound. The distal 1/3 of the tube was passed into the ureter, and the middle portion containing the perforations was placed within the cavity of the pelvis. With a purse-string suture around the tube on the renal capsule using 3-0 chromic catgut, the tube was firmly anchored to the kidney to prevent it slipping during subsequent manipulations. The ureteropelvic anastomosis was then completed around the tube. The pelvis was closed with the same fine absorbable suture. To further stabilize the tube, another purse-string suture on the skin around the tube was made with 2-0 silk suture. Atimes we flushed the tube with sterile normal saline until constant urine drainage was established. The operative wound was then closed and a tube drain left behind in the wound. With a drip set connected to the feeding tube, the nephrostomy drainage from it was passed into a sterile urine bag. The wound drain was also connected to another sterile receptacle. The volume of urine drained daily was measured, and recorded. The follow-up assessment consisted of renal ultrasonography and intravenous urography. This was done three months after surgery.

RESULTS

Were variable degrees of residual hydronephrosis.Nine patients (90%) had free drainage of urine through the nephrostomy tube. One had no drainage. The volume of urine drained daily through the nephrostomy ranged between 200ml and 1200 (mean 900.0 SD412.9). In 7 (77.8%) of the nine patients, the 24 hour drainage from the nephrostomy decreased to less than half of the first 24 hours in five to six days. This may have been an indication that a substantial portion of the urine made in the affected kidney was now passing through the repaired ureter. In such patients the nephrostomy was pulled out on the 6th post operative day. Two patients had persistent blood stained nephrostomy drainage. The tube specimens of the urine grew coliform organisms. The haematuria stopped after appropriate antibiotics were given. Their nephrostomy tube was kept until the 12th post operative day. One patient accidentally pulled out his tube on the 4th post operative day without any adverse sequelae. In all the patients, there were no leakages of urine after the removal of the feeding tube and all the tracts closed rapidly to allow the discharge of the patient the next day. The wound drain in all the patients was removed on the 2nd post operative day as non-drained more than 50 mls of blood. All patients had patent anastomosis at three or more months post-surgery. However there

DISCUSSION

The use of infant feeding tube as both stent and nephrostomy tube was associated with god results in our patients. All the ten patients had patent anastomosis at follow-up urography. Ultrasonography also did not reveal any parenchymal loss. In the absence of renal scintigraphy, findings suggest the preservation of function in the renal units repaired. The majority (90%) of the patients had free drainage of urine through the nephrostomy tube with variable daily urine volumes. In one patient there was no drainage at all. The volume of the urine output from the nephrostomy does not reflect the effectiveness of this drainage technique. Urine can flow down the ureter around the stenting portion of the tube resulting in decreasing amounts of nephrostomy drainage as edema at the nephrostomy

site decreases. This was our experience. By the sixth day the volume of nephrostomy drainage had decreased by over half in 7 of the 9 patients who had free nephrostomy drainage. The patient who had no nephrostomy drainage had a patent anastomosis at follow-up assessment. It is possible that blood clots may have blocked the holes created in the feeding tube. A wide anastomosis would allow all the urine produced by the affected kidney to flow around the stent down the ureter. Hence in the absence of symptoms there was little indication for meddling with the nephrostomy tube. Two of the patients had haematuria through the nephrostomy tube but this was tracable to infection.

The use of a small size tube is associated with very small nephrostomy incision. Haemorrhage and haematuria are usually not a problem. The effectiveness of paediatric feeding tube as a good material for urinary drainage has again been demonstrated in this study as in various urological procedures[14,15]. When an infant feeding tube is used in the manner described, it serves well as stent and nephrostomy. By the capillary action it drains urine from the renal pelvis thereby reducing the immediate pressure on the anastomosis. The plastic tube is inert to the tissue and so causes little or no reaction. Furthermore the tract left behind after removal is small and seals immediately preventing any urinary fistula.

CONCLUSION

We conclude that when a decision is taken to splint a pyeloplasty and protect it with a nephrostomy, a small size nasogastric tube provide excellent cheap and readily available alternative to the other forms of catheters. This is especially pertinent in centres with limited facilities.

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