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ENDOSCOPIC EXTRACTION OF ERODED MARLEX MESH IN A KOCK POUCH

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ABSTRACT

We report a case of recurrent calculi in a Kock pouch continent urinary diversion. An open operation was avoided by successfully excising the Marlex mesh and removing it with the associated calculi in an endoscopic fashion. (*J. Urol.*, 144: 974-976, 1990)

Continent urinary diversion has become an acceptable method to manage the urinary tract after radical cystectomy, severe forms of neurogenic bladder dysfunction and congenital bladder deformities. Innovative construction of a neobladder has resulted in a myriad of intestinal substitutions designed into a number of different pouch configurations.¹⁻⁸ The Kock pouch, in particular, has used Marlex mesh and staples in construction of the afferent and efferent limb continence device.^{1,2} Approximately 10 to 15% of the patients will require reoperation for malfunction of the afferent or efferent limb, including erosion of the Marlex collar and/or calculi.⁹ We report a case of recurrent calculi in a Kock pouch continent urinary diversion. The patient was managed successfully with endoscopic removal of the eroded Marlex mesh collars and associated urinary calculi.

CASE REPORT

A 69-year-old white woman underwent radical cystectomy and creation of a Kock pouch continent urinary diversion for invasive transitional cell carcinoma of the bladder in 1985. She did well until January 1988, when she had foul-smelling urine. Radiographic evaluation revealed multiple stones in the Kock pouch (fig. 1, A), which were managed endoscopically by debulking the majority of the calculi through the efferent nipple. In July 1989 foul-smelling urine recurred along with urinary incontinence between clean intermittent catheterizations of the pouch. Urine culture yielded *Proteus mirabilis* and *Escherichia coli*. A repeat plain abdominal film showed recurrent calculi in the efferent and afferent limbs, as well as in the pouch (fig. 1, B).

Endoscopic calculi extraction was repeated. A 26F nephroscope was manipulated into the pouch through the stoma of the efferent limb. Stone extraction was performed with ultrasonic lithotripsy and grasping forceps. Intraoperatively, the Marlex mesh collar in the efferent nipple could be seen eroding into the pouch. The tacking sutures of the Marlex mesh were excised with the endoscopic scissors, allowing the mesh to be removed in total from the efferent nipple (fig. 2). Additionally, the afferent limb was intubated via the nephroscope with difficulty due to the severe angulation and adherent stone debris. A 70-degree lens was used through the working port of the nephroscope to help identify the afferent limb. After debulking the majority of the stones eroded Marlex mesh was visible. A chest tube was placed through the efferent nipple, allowing additional stone fragments to drain by gravity. At a followup session the eroded Marlex collar and suture material from the afferent nipple were extracted by cutting the Marlex mesh and tacking sutures. The remaining visible calculi in the limb and pouch also were removed with the grasping forceps, rendering the patient free of stones (fig. 3). Analysis of the calculi recovered from the pouch revealed the composition to be mostly struvite.

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Subsequently, the patient has regained continence between clean intermittent catheterizations and has not had difficulty with recurrent calculi, stomal fistulas, urinary tract infections or colonization with *P. mirabilis*.

DISCUSSION

The advent of clean intermittent catheterization in conjunction with continent urinary diversion has allowed patients to avoid the necessity of an external urinary appliance. To maintain continence a number of diversions have used synthetic Marlex mesh and staples in the construction, predisposing these patients to subsequent urinary calculi.^{1,2} Endoscopic calculi extraction in continent urinary diversions has been reported avoiding the need for an open operation.¹⁰

We report a case of successful endoscopic removal of eroded Marlex mesh collars in a Kock pouch urinary diversion. The Marlex mesh had eroded into the pouch from its native position at the base of the afferent and efferent limbs. The Marlex mesh, staples and securing sutures acted as a nidus for calculi formation in the pouch. Initial debulking of the pouch calculi in 1988 did not extract the Marlex mesh collar (the underlying cause of the calculi), thus, leading to recurrent stones. Subsequently, in 1989 in a 2-stage procedure the Marlex mesh along with the associated staples, sutures and calculi was completely removed via an endoscopic route.

Endoscopic manipulation of intestinal substitutes can be performed with standard percutaneous instrumentation. Our approach is to calibrate the intestinal stoma with a urethral catheter, subsequently passing the catheter into the pouch. With a nephroscope or cystoscope the catheter then is used to orient the surgeon as endoscopy is performed. For increased visualization of the intestinal segment we tend to elevate the irrigant to 30 to 50 cm. water pressure. The excess irrigant from the higher pressures is managed easily by the inherent drainage of the catheter that has previously been placed in the pouch. Visualization also can be improved with a 70-degree lens through the working port of the nephroscope, which allows for identification of the afferent limb using the extra 70-degree lens as a periscope.

After inspection of the pouch as described previously, an Amplatz dilator set was used to dilate the nipple valve. Intermittent abdominal pressure facilitated visualization within the pouch. A chest tube with its multiple drainage holes in the pouch allowed for excellent postoperative drainage of remaining stone fragments and mucus. Although tedious, we found that the endoscopic scissors was adequate for removal of the synthetic Marlex mesh and teasing it away from the intestinal mucosa. Although it was possible to cut the Marlex mesh, our success was realized by identifying and then cutting the tacking sutures that held the Marlex mesh to the intestinal mucosa.

With these endoscopic techniques we were able to remove large calculi successfully as well as the eroded Marlex mesh from a Kock pouch urinary diversion. Iatrogenic injury was

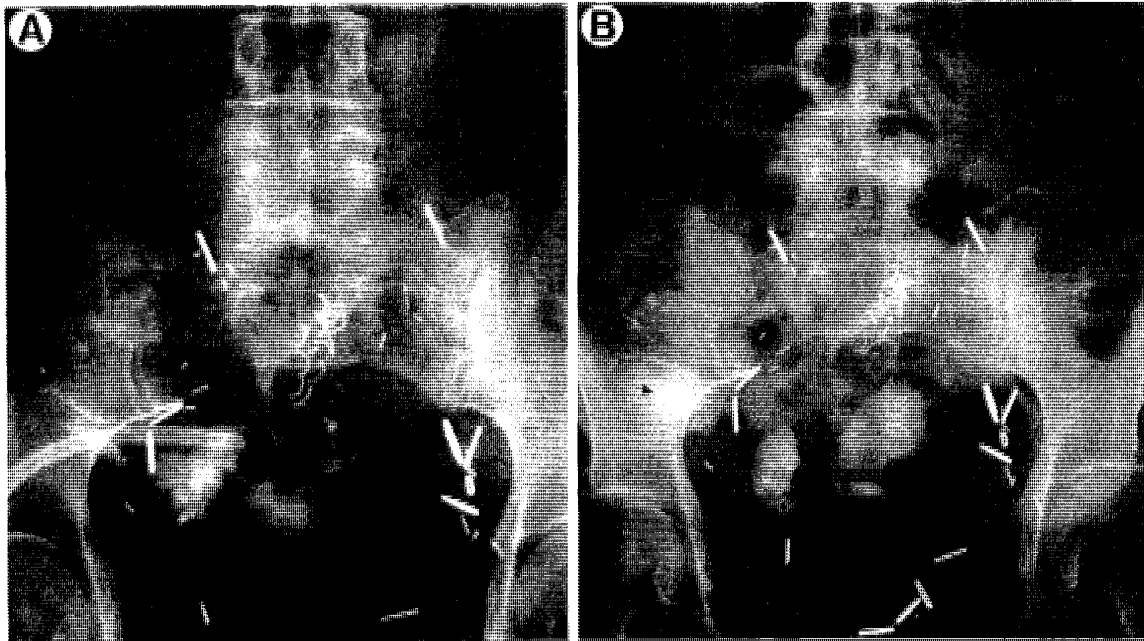


FIG. 1. A, plain abdominal film shows multiple urinary calculi in Kock pouch. B, recurrent urinary calculi filling Kock pouch. Arrows show calculi associated with efferent (left side) and afferent (right side) Marlex mesh.

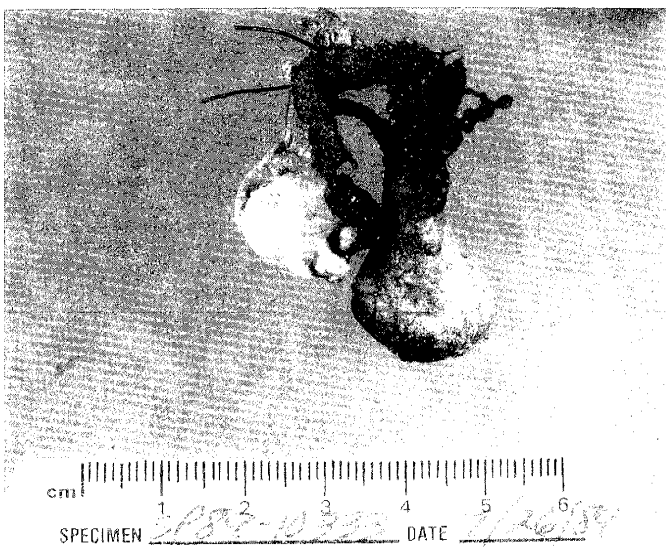


FIG. 2. Marlex mesh, tacking sutures and associated calculi endoscopically removed from efferent limb.

avoided by knowledge of the instruments at hand and careful visualization of the anatomy during the entire procedure as is required in all endoscopic procedures.

Of obvious concern in the preoperative assessment of this patient was the possibility that removal of the Marlex mesh would destroy the continence mechanism of the efferent limb of the previously constructed Kock pouch. The alternative to endoscopic management, however, is an open operation with its inherent risk to the mesentery of the pouch as well as the increased hospital stay and morbidity of an incision. The standard approach to manage eroded Marlex mesh and pouch calculi in a urinary diversion would be to enter the pouch surgically, remove the calculi and exposed Marlex mesh, and revise the efferent and afferent limbs as required.⁹ To avoid an open operation, therefore, we felt justified in attempting endoscopic removal of the Marlex mesh knowing full well that if this failed the standard approach could still be performed. Fortunately,



FIG. 3. Plain abdominal film after complete endoscopic extraction of Marlex mesh and calculi.

the patient regained urinary continence after the eroded Marlex mesh was removed.

In conclusion, we present a case of recurrent calculi in a Kock pouch urinary diversion. The Marlex mesh used to construct the efferent and afferent limbs had eroded into the pouch. An open operation was avoided by successfully excising the Marlex mesh and removing the calculi in an endoscopic fashion.

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