



PROLENE IS THY CULPRIT; BOYCOTT HIM – POST RENAL TRANSPLANT LOWER URETERIC CALCULUS WITH PROLENE ACTING AS A NIDUS – A RARE CASE REPORT

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ABSTRACT

Background: We present a rare case report of ureteric calculi over a prolene suture used for ureteroneocystostomy after a renal transplant done elsewhere; to bring to light the ill practice of using prolene still being followed; with an aim to spread awareness and curb this practice once and for all.

Case Presentation: A 35yr old male presented with painless gross haematuria after 3 years of live-related renal-transplantation done elsewhere. CT-Intravenous-urography revealed 5mm calculus at the vesicoureteric-junction (VUJ). Sr. creatinine was not raised.

Hence, Medical-expulsive-therapy (MET) was given for 6 weeks in the COVID era. As calculus persisted, he was taken for ureterorenoscopy that revealed 8mm calculus embedded on the prolene suture at ureteric orifice. The stone was fragmented, removed and the suture was cut using an endoscissor.

Conclusion: Though MET would be the right management for a calculus of 5mm size; in this patient, the stone was not passed per urethrally as it was formed over a prolene nidus. This fact was ascertained only after ureterorenoscopy.

Though, similar cases of vesical calculi have been reported in the past, this is the only case reported of a ureteric calculus formed over prolene suture in the early post-transplant period.

In our centre, we use polyglactin suture and have not noticed a single post-renal-transplant calculus case with suture acting as a nidus even on long-term follow-up. Ideal suture material would be polydioxanone (PDS) or polyglactin (vicryl). Prolene would be a very inappropriate suture material leading to calculi formation, should be avoided in favour of PDS/vicryl.

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INTRODUCTION

Background

Though the incidence of calculus disease post renal transplantation is very low, number of factors favours formation of stone. One such factor though rare is the ill practice of using non-absorbable sutures for ureteroneocystostomy. These sutures being non-absorbable acts as a nidus for infection and stone formation. Some past studies have reported occurrence of vesical calculi with suture acting as a nidus, however ours is a first study to report the occurrence of an ureteric calculi. This report also provides a meta-analysis of all past studies stating the type of non-absorbable suture materials used in transplant surgeries and frequency of stone formation. Thus by the medium of this case report, we want to spread a staunch clear cut message and awareness that though condemned, the practice of using non-absorbable sutures for ureteroneocystostomy in renal transplant is still being followed in some isolated centres and it has to be stopped once and for all completely.

Case Presentation

A 35 yr old male patient who underwent live related renal transplant (mother – to – son) elsewhere 3yrs ago presented with painless gross haematuria, total, self-limiting, not associated with blood clots or tissue bits, 2-3 episodes in 2weeks. He had undergone renal transplant in view of right non-functioning kidney due to calculus disease with left congenital dysplastic kidney.

Sr. creatinine was not raised (it was at nadir value – 1.4), urine culture was sterile and wbc counts were normal.

CT IVU was done – suggestive of 5mm calculus at vesicoureteric junction.

Medical expulsive therapy trial was given for 6 weeks in COVID era. As calculus persisted even after the therapy, patient was posted for ureterorenoscopy.

Intra op there was evidence of 8mm calculus embedded over the prolene suture at the ureteric orifice.

Stone was fragmented and retrieved, sutures were cut using endoscissor and removed and DJ stenting was done. Patient's complaints were relieved post surgery; dj stent was removed

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on pod7. Patient's metabolic work up was normal and 24 hr urinalysis also did not reveal any abnormalities.

DISCUSSION

O'Dea was the first person to report the occurrence of calculi (vesical calculi) in a renal transplant patient at the site of ureteroneocystostomy in 1975. Presentation of calculus disease posttransplantation varies from incidental detection to symptoms of UTI and haematuria. 4 cases were reported by Rhee *et al.* of vesical calculi occurring after combined pancreatic and renal transplantation, exposed sutures being the nidus for calculus formation. Characteristics of ideal suture - should be very fine, runs smoothly in tissues, inert not causing inflammation, not to be lithogenic, and should hold the tissues together for sufficient time until healing takes place. A study comparing urological complications of chronic catgut 4-0 (natural absorbable suture) with fine prolene 6-0 (synthetic nonabsorbable suture) in ureterovesical anastomosis (modified Lich method) found no difference as the knot- and cut-free ends of prolene were outside the bladder, only small amount of prolene was exposed to urine, and this was covered by urothelium sooner than later. However, the follow up in that study was only 18 months and the data published in other studies revealed it took much longer time (10 to 21 years).

Kehinde *et al.* in 1999 reported 7 patients with bladder stone after the use of nonabsorbable sutures (nylon, prolene, and silk). Watanabe *et al.* evaluated 3 patients with bladder stone, 3-15 months post-transplantation after use of absorbable sutures (polyglyconate and polydioxanone).

Urinary stone formation following kidney transplantation is a rare complication with an incidence rate of 1.8%. Although there are multiple causes, however the present discussion is focused mainly on suture material as a nidus for stone formation. Hence, it could be suture erosion of prolene in the present cases occurring as a long-term complication exposing the suture to urine resulting in stone formation. Erosion may result from an inflammatory reaction due to infection of the foreign body or, possibly, due to an immunological response to the graft or suture material. The reported incidence of urological complications following the transplantation was between 1% and 15% in the literature.

At our centre, we have been using polyglactin suture routinely for ureteroneocystostomy in transplant cases and no single case of post-transplant calculus have been noticed yet. Similar results have been reported with use of polydioxanone (PDS) sutures as well.

Table 1 so mentioned have been provided as, it can be seen that barring a single study, calculus formation with suture acting as a nidus has non- absorbable sutures acting as a culprit most frequently prolene and location is bladder; except our study which is first one to report a ureteric calculus occurrence.

Comparison and Analysis of Previous Studies and Current Study

Table 1

Studies	Suture used	Stone location	Mean duration post transplant	No. of patients affected
Dimple channamolou <i>et al</i> 2019	6-0 prolene	vesical	10-21years	5
O'dea 1975	4-0 chromic catgut	vesical	1year	1
Rhee <i>et al</i> 1999	prolene	vesical	5.5years	4

Kehinde 1999	Nylon, prolene, silk	vesical	4years	7
Watanabe 1986	Polyglycoconate, polydioxanone	vesical	9mnths	3
Klein and goldman 1997	Prolene suture	vesical	-	7
Current study	Prolene suture	Lower ureteric	18months	1

CONCLUSION

Though quite a few cases of post- transplant vesical calculi with suture acting as a nidus have been described in literature, our report is the first to describe a lower ureteric calculus. Hence, nonabsorbable suture material, even fine prolene should be avoided during ureteroneocystostomy in transplant recipients as they erode and cause stone formation in the long run. Synthetic absorbable fine suture material like polyglactin (vicryl)/ PDS is eminently suitable for this purpose.

Abbreviations

- MET – Medical expulsive therapy
- VUJ –vesicoureteric junction
- IVU – intravenous urography
- PDS – Polydioxanone
- UTI – urinary tract infection
- i/v/o – in view of
- Sr. – Serum
- DJ stent – Double J stent

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