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RESEARCH ARTICLE

CADAVERIC RENAL TRANSPLANT AND UROLOGICAL COMPLICATIONS – OUR EXPERIENCE

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ABSTRACT

Aim: Urologic complications in post renal transplant, are a cause of major concern as they occur in a high risk setting and cause considerable morbidity. Here we aim to present our 7 year experience in cadaveric renal transplant with respect to urological complications, analyse the possible risk factors, management modalities and prevention of the same.

Materials and Methods: From January 2011 to December 2017, data of all cadaveric graft recipients who developed urologic complications and managed in our institute, was retrieved retrospectively from Transplant Out Patient department and analyzed.

Results: Out of the 176 patients who underwent deceased donor renal transplant, 18(10.2%)developed urologic complications. Mean recipient age was 32 yrs, mean donor age was 37 yrs. 4 patients had post operative hematuria, out of whom 2 developed clot anuria, 2 patients developedlymphocele, 1 had urine leak (anastomotic dehiscence), 1 had surgical site infection (SSI) requiring split thickness skin grafting, 3 developed ureteric stenosis, 7 developed Transplant Renal Artery Stenosis (TRAS).

Conclusion: Early identification of urologic complications is required for preservation of optimal graft function.

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INTRODUCTION

Ever since the first successful renal transplantation by Dr. Joseph Murray from one twin to another, at Brigham hospital, Boston, in 1954 (Hatzinger, 2016), significant advancements have been made in the techniques of renal transplantation and the use of immunosuppressive agents, leading to a better overall outcome. The complication rate appears to have a decreasing trend (25% - 10%) (Rahnemai-Azar, 2015) and many of them are preventable. Currently, minimally invasive techniques for the management of urologic complications, has a rising trend (Ravindra, 2016), and should be used whenever possible to decrease recipient morbidity.

MATERIALS AND METHODS

Between January 2011 and December 2017, 176 patients underwent deceased donor renal transplant, and their data was retrieved retrospectively from Transplant Out Patient Department and analysed. Uretero vesical anastomosis was done by Modified Lich Gregoir technique and routine DJ stenting done, which was removed at 6 wks post operatively. Those who developed urologic complications were evaluated and managed according to symptom severity.

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RESULTS

Eight of 18 patients developed early and 9 of 18 developed delayed complications. 4 patients had hematuria (2.2%), 2 developed clot anuria, which required evacuation using Toomey's syringe followed by 3 way Foley catheterization and irrigation. 2 patients had lymphocele (1.1%), 6x5cm and 5x4cm each, which required ultrasound guided aspiration. 1 patient had urine leak (0.5%), with increasing drain output on post op day 14, the next day following catheter removal. CT cystogram showed anastomotic site leak, explored and pyelovesicostomy done over 4 Fr DJ stent. 1 patient developed surgical site infection (0.5%), unresolved and later required split thickness skin graft at 2 months post operatively. 3cases developed ureteric stenosis (1.7%), who presented with rising serum creatinine, two of them had fever, at 6months, 8 months and 14months post operatively. CT KUB and RGP (retrograde pyelogram) was done. One patient was managed with percutaneous nephrostomy with antegrade stenting, ureteroureterostomy was done in another, and graft nephrectomy was done in one patient, who developed recurrent pyelonephritis despite DJ stenting. 7 patients (3.9%) developed Transplant Renal Artery Stenosis (TRAS), between 3 – 10 months (mean 5 months) post op, 6 of whom were managed with endovascular stenting and serum creatinine and GFR (glomerular filtration rate) improved significantly at an average of 4wks postop, while graft nephrectomy was done in one patient for failed endovascular management.

S.no	Complication	No (%)	Male/female	Mean donor age(yrs)	Mean recipient age (yrs)	Time from transplant to intervention (mean)
1.	Hematuria	4 (2.2%)	3/1	42.4	32	3.5 days
2.	Lymphocele	2 (1.1%)	1/1	29	35	15 days
3.	Urine leak	1 (0.5%)	1/0	35.5	41.5	10 days
4.	Surgical site infection	1 (0.5%)	1//0	48	23	94 days
5.	Ureteric stenosis	3 (1.7%)	2/1	34.3	30.3	219 days
6.	Tras	7 (3.9%)	5/2	33.4	44.3	5 months

No case of graft urolithiasis, vesicoureteric reflux or stricture urethra noted.

DISCUSSION

The incidence of urologic complications post renal transplant is around 2- 13% (Ravindra, 2018). Early complications encountered include hematuria, lymphocele, SSI, urine leak. Late complications include ureteric stenosis, TRAS, graft urolithiasis, vesicoureteric reflux, stricture urethra (Ravindra, 2016 and Julien Branchereau, 2015).

Hematuria/ Clot Anuria: Most are ureterovesical anastomotic site bleeding (long cystotomy) (Alberts, 2014), or due to renal biopsy pre or post transplant for suspected rejection. Duplex USG may guide the management and most resolve spontaneously or with bladder irrigation. CT angiogram and highly selective percutaneous embolisation may be rarely needed (Julien Branchereau, 2015).

Lymphocele: Occurs in1-20% of cases (Ravindra, 2016), Usually presents from 2wks to 5 yrs post Transplant. Most are small and asymptomatic. It may also present with urinary retention, wound dehiscence, reduced output, raised creatinine, iliac vein thrombosis. Mostly it can be managed with percutaneous aspiration/ drainage, some may need marsupialisation (Zietek, 2007). Our cases resolved with aspiration alone.

SSI: Patients with high BMI (Body mass index), peripheral vascular disease, rheumatologic disease and narcotic abuse, were found to have a high risk of developing SSI according to Harris et al, (2015). Our patient was incidentally Hepatitis C virus positive and had prolonged infection which resolved leaving a raw area and split thickness skin grafting was done.

Urine Leak: Incidence is around 1.2-9% (Ravindra, 2016). Leak commonly occurs at Ureterovesical anastomotic site. Possible causes are ischemic necrosis (excess dissection),non reimplanted lower pole artery, suture dehiscence, ureteric kinks, defunctionalised bladder with delayed healing or an episode of acute urinary retention (catheter blockage). Management options include nephrostomy+DJstenting+ percutaneous drainage of urinoma, open repair in the form of ureterovesicostomy,pyelovesicostomy or anastomosis to native ureter (Dominguez, 2000). Our patient had gross urine leak, around 1-1.5 litres via drain tube and 100 ml via urethral Foley catheter and hence was explored.

Ureteric Stenoses/ Stricture: Incidence varies from 2.5-7%. Causes: Technical error (narrow antireflux tunnel, poor suturing technique, disturbing Golden Triangle), rejection episodes, infection. Presentation can be asymptomatic hydronephrosis, rising serum creatinine and oliguria. Management options include, <1cm stricture – endourologic – PCN+Antegrade stenting/ Balloon dilatation/ Holmium YAG LASER/ Cold knife/ Bugbee/ Acucise balloon endoureterotomy. >1cm stricture – open repair-ureteroureterostomy, ureteropyelostomy, Boari flap [9,10].Our patient who had mild narrowing was stented antegrade, other case with significant short segment narrowing underwent ureteroureterostomy, while one other patient lost his graft for recurrent pyelonephritis.

TRAS: Usually occurs in the first 6 months post transplant. The causes are an atheroma in donor artery, handling and suture technique, trauma to donor/recipient artery during harvest/implant, immune mediated vascular damage (Wei Chen, 2015). Patients present with worsening/refractory hypertension, flash pulmonary edema (Pickering syndrome) and graft dysfunction. Doppler Ultrasound and CT angiogram was done in our cases, 6 of them were successfully stented (endovascular), while one patient ended up in graft nephrectomy after failed stenting.

Conclusion

Meticulous retrieval and anastomotic techniques are of foremost importance in reducing the preventable urologic complications. Minimally invasive techniques have a critical role in management. Early identification and treatment of complications would help decrease post-transplant morbidity, length of stay in hospital, and also prevent early or late graft loss.

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