

## **Transurethral resection and retrograde ureteral stenting in obstructive uropathy secondary to Carcinoma Cervix-Palliative Rescue from an otherwise doomed existence**

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**Aims and objectives :** 1.To determine the impact on quality of life post trans-urethral resection of ureteric orifice and retrograde DJ stenting in patients with obstructive uropathy secondary to carcinoma cervix.

2. To compare the outcomes and quality of life of patients who underwent resection and DJ stenting with patients who underwent PCN insertion using the available literature about PCN.

**Materials and methods:-** In this study, 40 patients were selected for palliative urinary diversion by transurethral resection of ureteric orifice and internal drainage using DJ stenting.77.5%ofpatientspresentedwithobstructive uropathysecondarytorecurrenceofcarcinomacervix,20%presentedasprimarytumour and 2.5% presented as VUJ stricture post radiotherapy. 90% had bilateral involvement of the ureteric orifice and only 10% had unilateral involvement.

**Results:-** Themeancreatininevalueamong40patientswas4.12mg/dlbeforetransurethralresection andstenting.62.5%underwenttransurethralresectionofuretericorificeandbilateralDJstentingwhile37.5% underwent unilateral DJ stenting. Complete renal recovery was seen in 2 weeks with creatinine values<1.5mg/d in 72.5%whereasinrestofthe27.5%patients mean creatinine was<3.0mg/dl.

### **Conclusion:-**

ThetechniqueoftransurethralresectionofuretericorificeandretrogradeDJstentingasapalliative procedure was able to show better quality of life with respect to physical and mental functioning in patients with obstructive uropathy secondary to carcinoma cervix. Also the renal recovery wasgood and comparable to PCN.

**Keywords- Obstructive uropathy, Retrograde DJ stenting, Carcinoma cervix**

### **INTRODUCTION.**

Carcinoma cervix is the most common cancer in developing countries and is a public health concern worldwide. Renal failure is regarded as the most common cause of death by cervical cancer. In cervical carcinoma, the incidence of ureteral obstruction at presentation varies from 14 to 34.5%<sup>1</sup> with obstructive uropathy and raised serum creatinine<sup>2,3</sup>. Ureteral obstruction from malignancy is anominoussign and maybe duetocompressionbytheprimary ormetastatictumour,retroperitonealadenopathy,directtumorinvasion or by radiation induced ureteric stricture.Mediansurvivalfor patientstreatedfor uropathyis3to7months.<sup>4-8</sup>

Acute ureteral obstruction associated with renal failure, pain or fever is a urological emergency requiring prompt evaluation and treatment.

Most commonly current management options involved decompression by a cystoscopically placed ureteral stent or percutaneous nephrostomy (PCN) tube. In the past decade, there has been a remarkable improvement in the endoscopic and percutaneous techniques used to relieve ureteral obstruction and these techniques have been applied for palliation in patients with advanced malignancy.<sup>6</sup>

Palliative techniques like percutaneous nephrostomy has been used in improving the renal function but quality of life is debatable as this carries the morbidity of pain, tube blockade, urine leakage, bad odour, accidental tube slippage, tube site infection and lack of patient compliance. To overcome these problems associated with PCN, internal drainage in the form of stenting should always be attempted. But stenting may not be possible in all the cases due to obstruction of the ureteric orifices by tumour or radiation induced stricture.

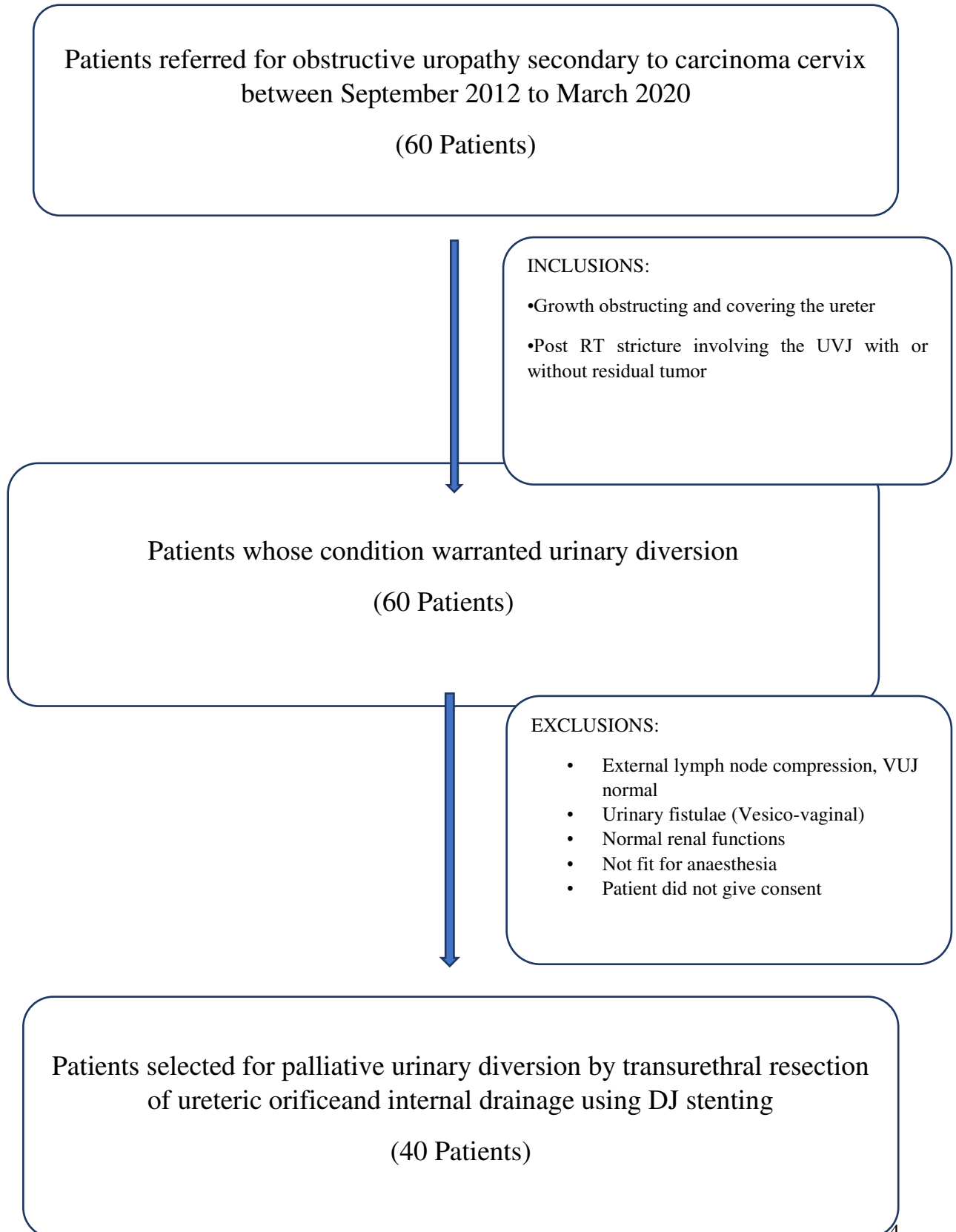
In such cases transurethral resection of the tumor involving the ureteric orifice has good chances of stenting and relieving the obstruction. In these cases, transurethral resection of ureteric orifice and stenting as a palliative procedure has not been tried. Hence in this study we attempted a novel technique of resection of ureteric orifice and retrograde stenting to improve quality of life in patients with obstructive uropathy secondary to carcinoma of cervix.

**Primary objective:** - To determine the impact on quality of life post trans-urethral resection of ureteric orifice infiltrated by tumor and retrograde DJ stenting in patients with obstructive nephropathy secondary to carcinoma cervix.

**Secondary objectives:** - 1. To compare the outcomes and quality of life of patients who underwent resection and DJ stenting with available literature about PCNs.

2. To determine the outcome and complications associated with trans-urethral resection and retrograde stenting.

## STUDY DESIGN



## MATERIALS AND METHODS:

This study was conducted at JSS Hospital, Mysore, Karnataka, India from September 2012 to March 2020. 60 patients with obstructive uropathy secondary to carcinoma cervix whose condition warranted urinary diversion were considered for the study. Out of 60 patients 20 patients had normal renal function and normal VUJ. Hence these patients were excluded from the study. 40 patients with involvement of VUJ needing transurethral resection of ureteric orifice and DJ stenting were reconsidered for the study. Sample size was calculated as 36, which was rounded off to 40.

Sample size was calculated based on assumption that pre-surgery physical functioning mean score would be 25 and would increase to 30 after surgery with SD 1 as 10, and SD 2 as 10, alpha error as 5%, power as 90%. Sampling technique was non-random sampling technique.

Cases of Carcinoma Cervix with obstructive uropathy secondary to obstruction at the level of ureteric orifice and post radiotherapy stricture involving the VUJ with or without residual tumor met the inclusion criteria. Exclusion Criteria included External lymph node compression with VUJ being normal, urinary Fistulae (Vesico-Vaginal), normal renal function, not fit for anaesthesia, and patients who did not give consent for the procedure.

A written consent as approved by the institutional review board of human subject experiments were obtained prior to the surgical procedure. Pre-operative evaluation included complete hemogram, RFT, Urine microscopy and culture sensitivity, Arterial blood gas analysis (optional), ECG, 2D Echo, Ultrasound KUB, plain CT/ MRI KUB region.

Under spinal anesthesia, patient was put on lithotomy position and cystoscopic assessment done using 22Fr cystoscope. Bladder assessed for capacity and anatomical location of both the ureteric orifices and any growth in the bladder in the region of trigone.

During cystoscopy when ureteric orifice was not visualized those cases were included in the study.

Under aseptic precaution sterile methylene blue injected by ultrasound guidance into the kidneys. Trans-

urethral resection is done using continuous irrigation rotatable 26Fr resectoscopes sheath along with working element and 30 degree telescope. Bladder is filled to half its maximum capacity.

Layered resection of the bladder is done at 80W using monopolar current till ureteric orifice is identified.

During transurethral resection once the efflux of methylene blue is seen guidewire is deployed and DJ stent railroaded over the guidewire using cystoscope under fluoroscopic guidance. The depth and amount of resection is assessed according to site and size of tumor near UVJ.

Patients were assessed with respect to serum creatinine values pre-operatively and in post operative period day 7, 14 and 90. and the quality of life preoperatively and

then in postoperative period day 7 & day 90 using standard quality of questionnaire form (SF-36). The quality of life is then scored using the SF-36 calculator available in the website; [www.sf-36.org](http://www.sf-36.org).

The following components in QOL were assessed;

1. Physical Health (PCS): Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), & General Health (GH)
2. Mental Health (MCS): Vitality (VT), Social Functioning (SF), Role-Emotional (RE), & Mental Health (MH)

The associated stent complications were also assessed with respect to flank pain, dysuria, hematuria, and fever secondary urinary tract infection. The complications requiring admission were considered significant.

### **STATISTICAL ANALYSIS:**

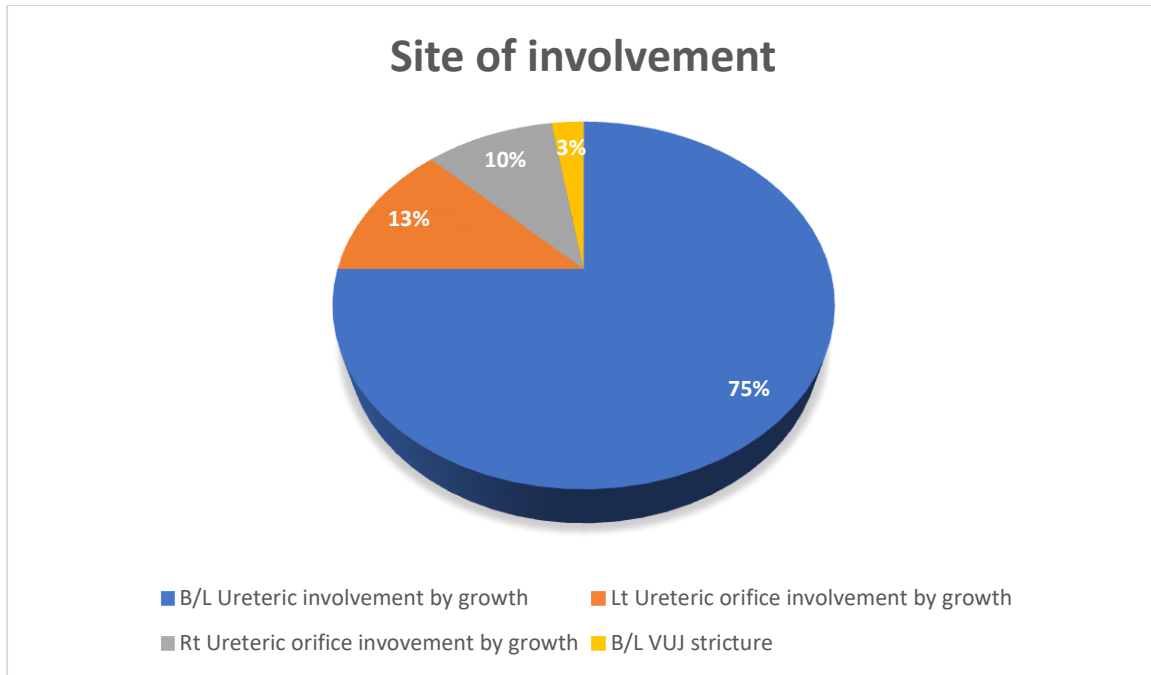
Descriptive statistics was done by calculating mean, standard deviation, proportions.

Inferential statistics was done by using repeated measure analysis of variance (RMANOVA).

P value < 0.05 is considered significant. All the calculations were done using SPSS software 19.0 version.

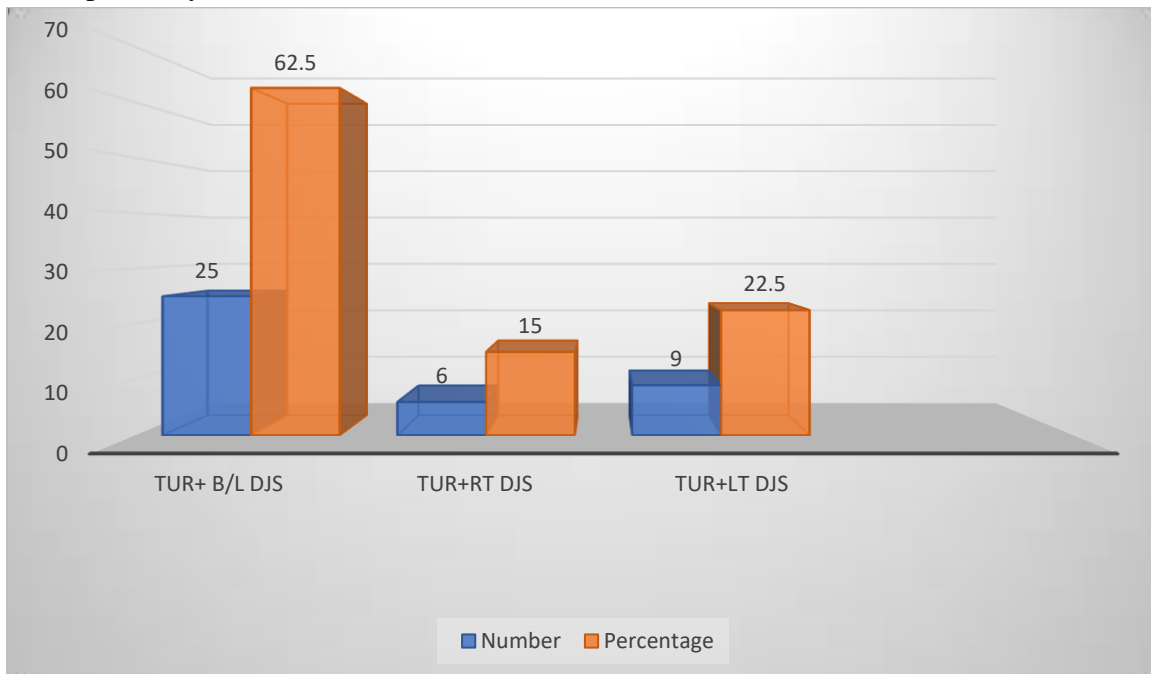
### **RESULTS**

In this study of 40 patients, minimum age was 33 years and maximum age was 77 years with a mean age of 48 years. The average duration of hospital stay was 10.3 days with minimum and maximum being 3 days and 20 days respectively. The most common presentation was oliguria and pain abdomen which was seen in 20 (50%) and 21 (52.5%) patients respectively. Out of 40 patients, 4 (10%) had diabetes mellitus and 10 (25%) had hypertension. 8 patients (20%) underwent Radical hysterectomy and 32 patients (80%) received chemoradiation or radiotherapy alone. 36 patients (90%) had bilateral ureteric involvement and 4 patients (10%) had unilateral ureteric involvement. Among 40 patients, 15 (37.5%) had hemo-dialysis prior to treatment and 25 (62.5%) did not undergo dialysis. The cystoscopic findings showed growth involving both ureteric orifices in 30 patients (75%), left ureteric orifice involvement in 5 patients (12.5%), right ureteric orifice involvement 4 patient (10%), bilateral VUJ stricture in 1 patient (2.5%) as shown in the graph 1.0



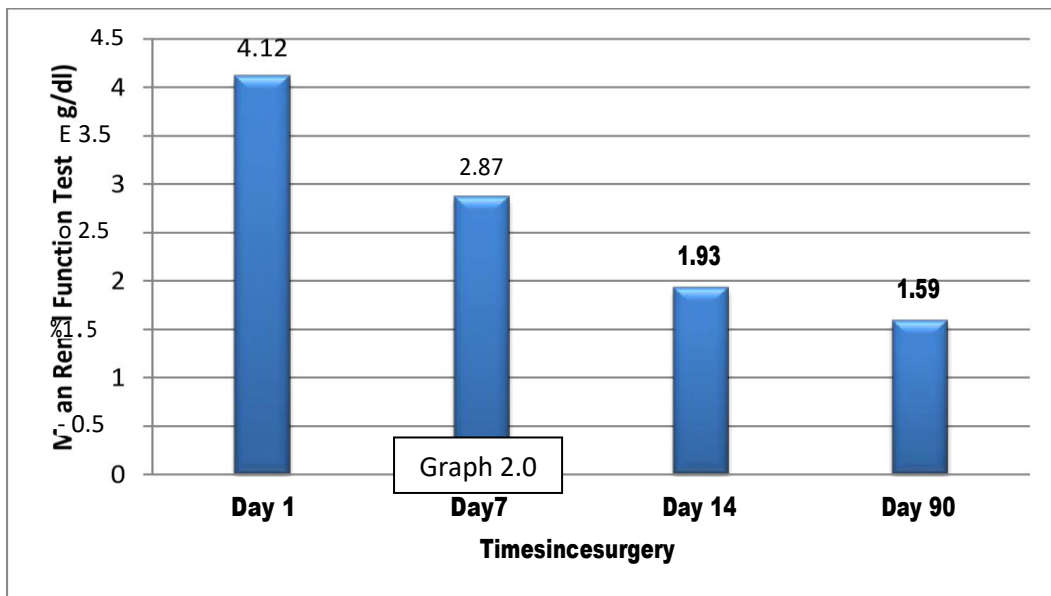
**Graph 1.0 – Site and nature of obstruction.**

Out of 40 patients, 25 (62.5%) underwent TUR of ureteric orifice and bilateral DJ stenting and 15 (37.5%) underwent unilateral DJ stenting respectively as shown in graph 2.0. 22 (55%) patients underwent 6Fr stent placement followed by 16 (40%) with 5Fr and 2 (5%) with 7Fr respectively.



**Graph 2.0 – TUR and DJ stenting .**

The mean decrease in serum creatinine post TUR and DJ stenting on repeated measure using ANOVA between day 1 and day 7 was not significant. However between day 1, 14 and 90 it was statistically significant with P value < 0.05 as depicted in Graph 3.0



Graph 3.0

Table 1.0 Parameters depicting quality of life post TUR of ureteric orifice and DJ stenting

|    | <b>QUALITY OF LIFE MEASUREMENT</b> | <b>DAY 1</b>     | <b>DAY 7</b>     | <b>DAY 90</b>    | <b>P value</b> |
|----|------------------------------------|------------------|------------------|------------------|----------------|
|    |                                    | <b>MEAN (SD)</b> | <b>MEAN (SD)</b> | <b>MEAN (SD)</b> |                |
| 1. | Physical functioning               | 26.81 (6.50)     | 30.34 (9.37)     | 35.01 (9.76)     | <0.05          |
| 2. | Role physical                      | 37.94 (37.84)    | 33.89 (8.14)     | 38.65 (10.44)    | >0.05          |
| 3. | Bodily pain                        | 36.22 (5.66)     | 38.17 (5.48)     | 42.09 (7.89)     | <0.05          |
| 4. | General health                     | 34.68 (5.39)     | 35.04 (6.30)     | 37.84 (3.77)     | <0.05          |
| 5. | Physical component health score    | 30.75 (5.06)     | 32.96 (5.43)     | 37.38 (6.86)     | <0.05          |
|    | <b>QUALITY OF LIFE SCORING</b>     | <b>DAY 1</b>     | <b>DAY 7</b>     | <b>DAY 90</b>    | <b>P VALUE</b> |
|    |                                    | <b>MEAN (SD)</b> | <b>MEAN (SD)</b> | <b>MEAN (SD)</b> |                |
| 1. | Mental health                      | 28.30 (6.35)     | 34.79 (6.23)     | 37.78 (8.48)     | <0.05          |
| 2. | Role emotional                     | 25.54 (7.60)     | 30.44 (12.26)    | 33.70 (13.44)    | <0.05          |
| 3. | Social functioning                 | 33.61 (6.33)     | 35.35 (4.88)     | 38.62 (8.37)     | <0.05          |
| 4. | Vitality                           | 38.94 (7.15)     | 43.19 (6.86)     | 44.15 (6.09)     | <0.05          |
| 5. | Mental component health scale      | 32.29 (5.65)     | 37.45 (6.84)     | 40.77 (7.57)     | <0.05          |

P, repeated measure ANOVA, <0.05

The quality of life with respect to physical and mental functioning after TUR of ureteric orifice and DJ stenting has been depicted in table 1.0

Physical functioning, bodily pain, general health and physical component health score showed significant improvement with p value <0.05 except role physical which was not significant with p value >0.05.

Mental health, role emotional, social functioning, vitality and mental component health scale showed significant improvement with p value <0.05.



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## DISCUSSION

Malignant ureteral obstruction can present with urosepsis, renal failure and localized pain or diagnosed during staging of malignancy or evaluation of impaired renal function. The primary site of neoplasia is a factor that can significantly influence patients survival rates.<sup>9</sup> Ureteral obstruction associated with uterine cervix cancer usually have better outcome than other types of neoplasia<sup>10,11,12</sup> with an increment of 1 year or more in approximately 60% of patients<sup>10</sup>. Many different techniques have been described as palliative urinary diversion procedures to minimize the complications of obstructive uropathy secondary to involvement of ureters by carcinoma cervix. The techniques described have been focused on reducing the obstruction and thereby improving the creatinine clearance and also provide better quality of life.

The onset of poor renal residuals in addition to a usually compromised physical status because of cancer and cancer-related treatments may immediately provoke decisions to relieve the obstruction in almost every case. In earlier years, open surgical placement of nephrostomy tubes for the management of malignant ureteric obstruction was common practice<sup>13,14</sup>. The open procedure was associated with high complication and mortality rates.

Goodwin et al reported the first percutaneous puncture in 1955. Since then PCN has been indicated for patients with unilateral or bilateral ureteric obstruction in several benign diseases where retrograde urinary stent is difficult especially in the presence of infection or sepsis<sup>15</sup>. This procedure is usually relatively safe, simple, and fast and presents low morbidity and mortality rates.

PCN is tolerated well by patients where it is kept for short duration like in obstructive uropathy secondary to benign causes. However in malignant obstructive uropathy, patient need to keep the PCN tube lifelong where antegrade stenting was not possible. Maintaining the PCN tube for longer duration has its own disadvantages like pain, foul smelling discharge, tube dislodgement and decrease in quality of life. This significantly increases morbidity resulting in poor compliance.

Retrograde ureteral stenting is a less morbid form of urinary diversion and is comfortable for patients but occurrence of anatomic deformities, bleeding, ureteral compression associated with malignancy can prevent its accomplishment.<sup>4,16</sup> Ganatra and Soper et al reported failure rates ranging from 40.6% to more than 80%.<sup>17,18</sup> Failure to stent was mainly due to difficulty in locating the ureteric orifice when the growth was involving the VUJ.

In cases where there was difficulty in locating the ureteric orifice for retrograde stenting, antegrade stenting was tried. However antegrade stenting is a two stage procedure requiring anaesthesia with an increased risk of hemorrhage at the point of insertion, and requires an experienced interventional radiologist. The success rate as reported by Harding et al is 82 - 90% in cases of strictures involving the VUJ or ureters with external compression by lymph nodes. Antegrade stenting failed in patients who had growth at VUJ. These techniques have high chances of ureteric injury as well as bowel injuries.<sup>19,20</sup>

Newer techniques were developed alternative to retrograde stenting and PCN tube insertion with respect to complications associated with it and also address the quality of living. Subcutaneous nephrovesical urinary diversions were developed starting before 1994 by Lingam and

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colleagues<sup>21,22,23</sup>. Nephrovesical bypass can be done in one stage or two stage and requires general anaesthesia, require restraining and has a learning curve. Change of stents are required every 4 months.

In patients with carcinoma of bladder with ureteric obstruction, deep resection of the tumour results in opening up of ureteric orifice and stenting has been done successfully wherever indicated. Same technique of

transurethral resection of ureteric orifice in carcinoma cervix presenting with obstructive uropathy has been tried in our study with the aim of improving the quality of life of patients. There is paucity of literature on transurethral resection of ureteric orifice and stenting in patients with carcinoma cervix. This technique is well versed with endo urologists who have been doing TURBT for carcinoma bladder.

Fujikawa et al reported a 4.1% ureteral stenosis rate in the treatment of cervical cancer using external beam radiotherapy combined with remote after loading brachytherapy<sup>24</sup>. In comparison to Fujikawa, our study had 30% ureteric stricture secondary to radiotherapy. In our study all 40 patients underwent transurethral resection of tumor involving the ureteric orifice and DJ stenting. 25 patients (62.5%) underwent B/LDJ stenting and 15 patients (37.5%) underwent U/LDJ stenting as a palliative procedure. After placing DJ stent, kidney function was restored in 29 patients (72.5%) and 11 patients (27.5%) had creatinine value of <3mg/dl at 14 days which normalized in 7 patients and 4 patients had stable renal function of <2mg/dl when followed for stent replacement. None of the patients required dialysis post stenting.

In a study done by Romero et al, of the 43 patients under assessment, significant improvement occurred in 28 patients (65.1%), and 17 patients (39.5%) presented normalization of their BUN and creatinine levels after PCN insertion<sup>25</sup>.

In our study 7 patients (17.5%) had stents syndrome in the form of storage LUTS, flank pain, suprapubic discomfort and occasional hematuria none requiring blood transfusion.

Stents syndrome reduced after 1 week with anticholinergics and alpha blockers. None of the patients who underwent stenting required removal of the stent

for severe stents syndrome. 2 patients (5%) developed fever requiring antibiotics. One patient underwent replacement from 5Fr to 7Fr due to stent

block causing hydronephrosis which subsequently improved. None of four patients had vesico-vaginal fistula.

In our study only 5 patients (12.5%) were lost for follow up whereas the rest 35 patients (87.5%) underwent

replacement of stents at 3 month follow up resulting in a good compliance rate for stenting. External tube drainage is known to have a high success rate of up to 98% but a complication rate of >40% causes frequent re-hospitalisation<sup>27</sup> resulting in significant decrease in quality of life and poor compliance. Besides urinary tract infections, catheter obstruction by debris, urinary leakage, and inflammation of the skin at the point of insertion, along with cracking, twisting, or accidental slippage of the percutaneous tube add on to the poor quality of life in these patients.

In the study by Romero et al, complications associated with PCN tube insertion was 43%.

Loss of catheter was seen in 8 (30.7%), urinary tract infection 5 (19.2%), skin infection 1 (3.85%), hematuria 1 (3.85%) respectively.<sup>25</sup>

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One of the major concerns in palliative treatment for advanced cancers is to take into account the quality of life issues. Quality of life is the state of complete physical, mental, and social well-being and not merely the absence of disease.

Quality of life consideration plays a significant role in exploring pertinent precautions and in evaluating the quality of medical health service. SF36, which was used in this study, properly integrates the physical, mental, functional, and subjective feelings of cancer patients. It has been widely recognized due to its desirable

conciseness, easy management, credibility and validity, and other favourable factors<sup>28</sup>

In our study quality of life issues with respect to Physical Component Score

(PCS) which included 4 domains physical functioning

(PF), role physical (RP), bodily pain (BP), general health (GH) and Mental Component Score (MCS) which also include 4

domains mental health (MH), role emotional (RE), social functioning (SF), vitality (VT) were

addressed. In our study, SF36 outcomes indicated that PCS scores differed significantly in patients pre stenting and post stenting ( $<0.05$ ). The PCS score before diversion was less compared to higher score after diversion indicating physical functioning improvement after relieving the obstruction.

Patients MCS scores showed significant improvement after relieving the obstruction ( $<0.05$ )

who were already diagnosed as cancer cervix and did not seem to act as a confounding factor in altering the score.

The success of transurethral resection of ureteric orifice and stenting was evaluated by

comparing the scores of physical health domains like PF, BP, GH before treatment and after

treatment at day 14 and 90, which indicated improved QOL. However the RP domain did not show any significant change before and after treatment at day 14 and 90 which could be attributed to the questionnaire being objective type.

The MCS domains like MH, RE, SF and VT showed improvement in the scoring values before

and after transurethral resection of ureteric orifice and DJ stenting indicating improved QOL.

In comparison to the study done by Shekarriz et al on outcomes of palliative urinary diversion for malignant obstruction between stenting and nephrostomy, QOL was assessed using KPS

scoring system. This scale was used as a way to quantify objectively the functional status of cancer patients after diversion rather than to assess their "quality of life," which is more difficult.

The study suggests that the majority of patients with bilateral ureteral

obstruction secondary to malignancy had a poor performance status for the remainder of their life after diversion.<sup>29</sup>

## CONCLUSION

1. Transurethral resection of ureteric orifice and retrograde DJ stenting in patients with obstructive uropathy secondary to carcinoma cervix as palliative urinary diversion technique is effective when compared to other techniques of urinary diversions and has good renal recovery
2. It is a technical modification to improve the chances of internal stenting with focus on providing of better QOL both physical as well as mental health.
3. Complication of resection of ureteric orifice and retrograde stent placement are

minimal which can be treated conservatively.

4. Patients have better compliance rate.

### **Recommendations of the study**

In cervical cancer, patients presenting with advanced malignancy with obstructive uropathy is over 70%. Different palliative techniques have been debated in improving the renal function and quality of life in literature. In this study we developed a novel technique of palliative urinary diversion in patients where retrograde stenting was not possible either due to primary/recurrent tumor involving the ureteric orifice or VUJ stricture secondary to radiotherapy.

The technique of transurethral resection of ureteric orifice and retrograde DJ stenting as a palliative procedure was able to show better quality of life with respect to physical and mental functioning and also the renal recovery was good.

So we would like to make the following recommendations:

1. Transurethral resection of ureteric orifice and DJ stenting as a palliative urinary diversion is feasible and can be attempted in lower ureteric strictures involving the VUJ secondary to radiotherapy or primary/recurrent tumour in carcinoma cervix with a good success rate and minimal complications.
2. Role of TUR and internal DJ stenting in management of obstructive uropathy in cervical cancers actually need to be defined in large sample based prospective randomized and comparative study.

### **ABBREVIATIONS:**

QOL- QUALITY OF LIFE

PCS- PHYSICAL COMPONENT SCORE

MCS- MENTAL COMPONENT SCORE

PF- PHYSICAL FUNCTIONING

RP- ROLE PHYSICAL

BP- BODILY PAIN

GH- GENERAL HEALTH

MH- MENTAL

RE- ROLE EMOTIONAL

SF- SOCIAL FUNCTIONING

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VT- VITALITY

KPS- KARNOSKY PERFORMANCE SCORE

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