

# Urinary Tract Lesions After Surgery for Gynecological Pelvic Cancers at the Conakry University Hospital

**Koundouno Aly Mampan<sup>1</sup>, Traore Bangaly<sup>2</sup>, Camara Soriba Naby<sup>3</sup>, Keita Mamady<sup>2</sup>, Diakité Saikou Yaya<sup>1</sup>, Camara Fode Lansana<sup>1</sup>, Baldé Abdoulaye Korse<sup>1</sup>, Balde Oumar Taibata<sup>1</sup>, Diallo Abdoulaye Bobo<sup>4</sup>, Toure Aboubacar<sup>1</sup>**

<sup>1</sup>Department of Visceral Surgery Donka National Hospital, Faculty of Sciences and Technic of Health Gamal Abdel Nasser, University of Conakry, Conakry, Guinea

<sup>2</sup>Department of Oncologic Surgery Donka National Hospital, Faculty of Sciences and Technic of Health Gamal Abdel Nasser, University of Conakry, Conakry, Guinea

<sup>3</sup>Department of Visceral Surgery, Friendship Hospital Sino Guinean of Kipe, Faculty of Sciences and Technic of Health Gamal Abdel Nasser, University of Conakry, Conakry, Guinea

<sup>4</sup>Department of Urology Ignace National Hospital, Faculty of Sciences and Technic of Health Gamal Abdel Nasser, University of Conakry, Conakry, Guinea

<sup>5</sup>Department of General Surgery Ignace National Hospital, Faculty of Sciences and Technic of Health Gamal Abdel Nasser, University of Conakry, Conakry, Guinea

## Email address:

cnabysoriba@yahoo.com (C. S. Naby)

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**Abstract:** The aim of this study was to describe the urinary complications of surgery for gynecological pelvic cancers and their management at the university hospital in Conakry. Patients and methods: This was a descriptive multicenter study in the main surgical treatment services for gynecological pelvic cancer at the University Hospital of Conakry from 2007 to 2017. Results: Out of 22 cases collected, we found 10 (45.5%) cases during surgery and 12 cases of postoperative complications, including 8 (36.36%) early and 4 (18.18%) late. Direct suture on a ureteral probe in 3 cases and by reimplantation according to the Politano Leadbetter method in 2 cases. Laparotomy fistulorrhaphy was performed in 2 (9.1%) cases of VF. the Latzko technique for 6 (27.3%) other cases of FVV. The 2 cases of FUV were repaired by ureteral reimplantation according to the Lich-Grégoire method. In cases of stenosis, we proceeded to segmental resection followed by suturing on a ureteral probe. The morbidity consisted of: 2 cases of secondary VF, suppuration, 2 urinary incontinence, Operative mortality was 3 (13.6%) cases. Conclusion: The prevention of these lesions is the best way and requires a good knowledge of the anatomy and the surgical techniques. Early diagnosis of gynecologic pelvic cancer is necessary to minimize surgical risks.

**Keywords:** Urinary Tract, Gynecological Pelvic Cancers, Conakry University Hospital

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## 1. Introduction

Ureteral and bladder lesions are the main urinary complications after radical surgery for cervical cancer [1]. This is a significant problem facing urologists, gynecologists, general surgeons and oncologists. These lesions are explained by the close anatomical relationships between the

urinary and genital systems in women, when these normal anatomical relationships are modified on the one hand and on the other hand the involvement and invasion of these organs by cancer. [2]. They can be recognized intraoperatively or postoperatively. In the best cases, the urinary lesion is

identified intraoperatively, allowing immediate repair. However, the lesion is diagnosed a few hours or even a few days after surgery [3]. The complications are directly related to the extent of the associated excisional operations. They are therefore dependent on the context where the gesture is performed. The treatment of these lesions is surgical and the choice of technique depends on the site, the extent of the lesion, the general condition of the patient and the prognosis related to the primary cancer. Eisenhauer et al [4] reported 3.5% of urological complications while bladder lesions represented 2 to 3% according to Bernard [5]. Ureteral strictures, bladder or secondary ureteral fistulas are observed especially when treatment has been radio-surgical. According to Leblanc [6], these complications are found in 15% of distal resections and in less than 3% for proximal forms. For Castaigne [9], urinary complications are found in 6 to 22% in pelvic exenteration. Diallo et al reported 5.3% urological complications after radical hysterectomy.

## 2. Patient and Methods

This was a descriptive multicenter retrospective study in the main surgical treatment services for gynecological pelvic cancer at the University Hospital of Conakry from 2007 to 2017.

All the women who had urinary lesions (ureteral and bladder wounds, ureteral section, vesico-vaginal fistulas, vesico-uterine fistulas, strictures) after surgery for gynecological pelvic cancer were included in this study.

The departments involved were the Gyneco-Obstetrics of Donka and Ignace Deen, the Urology of Ignace Deen, the Oncological Surgery Unit of Donka and the Visceral Surgery of Donka.

## 3. Results

During the study period, 343 patients were operated on for gynecological pelvic cancers, of which 22 (6.4%) presented with urinary lesions.

These lesions concerned women with a mean age of  $41.8 \pm 12.73$  years. Seventeen (77.3%) of them were housewives.

The history of abdominopelvic surgery was noted in 10 patients (45.5%). Only one patient (4.5%) had received radio and neoadjuvant chemotherapy. The patients presented with the following cancers cervix and endometrium 17 cases (77.2%) ovary 4 cases (18.8%) and vagina 1 case (4.5%). These were squamous cell carcinomas in cervical and vaginal cancers 18 cases (81.8%), and adenocarcinomas in ovarian cancers 4 cases (18.2%).

For cancers of the cervix, the initial clinical stage was II in 7 (31.8%) cases and IB in 4 (18.2%) cases. In 3 of the 4 cases of ovarian cancer operated on, the stage was not specified.

Radical hysterectomy type Piver III, V, and II in 6, 4 and 3 cases respectively. For ovarian cancer, it was regional surgery in 4 cases (18.2%). The only case of vaginal cancer had undergone pelvicotomy (Table 1).

**Table 1.** Characteristics of cancers and initial operative procedures according to the primary site.

Characteristics	cervix	Ovary	Vagina
Histology			
Adénocarcinoma	-	4 (18,2%)	-
Squamo cell carcinoma	17 (77,2%)	-	1 (4,5)
Stage according to FIGO			
IB	3 (13,6%)	-	-
IB2	1 (4,5)	-	-
IIA	3 (13,6%)	-	-
IIB	4 (18,2%)	1 (4,5)	-
IIIA	1 (4,5)	-	-
IVA	2 (9,1%)	-	-
Not specified	1 (4,5)	3 (13,6%)	1 (4,5)
Operative procedures			
C H E Piver I	2 (9,1%)		
Piver II	3 (13,6%)		
Piver III	6 (27,3%)		
Piver IV	2 (9,1%)		
Piver V	2 (9,1%)		
Regional surgery		4 (18,2%)	
Pelvectomy	1 (4,5%)		

Urinary lesions were classified in relation to the time to recognition:

1. intraoperatively when the diagnosis was made during the surgery;
2. and postoperatively, if the diagnosis was made after the surgery.

Peroperative lesions

We have described the circumstances of the findings, the site, the topography, the laterality, and the type of urinary lesion.

The lesion of the urinary tract was observed through urine leakage into the operating field, a wound or the presence of blood in the bag connected to the urinary catheter placed before the surgery.

Intraoperative urinary lesions: were repaired immediately before closure of the abdominal wall by the following methods depending on the nature and site.

- 1) Uretero-vesical reimplantation according to the Politano Leadbetter Technique.
- 2) Uretero-vesical reimplantation according to Lich Gregoir.
- 3) Ureteral resection and anastomosis
- 4) The bladder suture.

**Table 2.** Urinary lesions according to the primary site, the type of lesion and the time to discovery.

Urinary tract lesion	Cervix n (%)	Ovary n (%)	Vagina n (%)	Total N (%)
intraoperative				
1) wounds	4 (18,2%)	3 (13,6%)		7 (31,8%)
2) Sections	4 (18,2%)	1 (4,5%)	1 (4,5%)	6 (27,3%)
Postopérative				
1) FVV	7 (31,8%)	1 (4,5%)		8 (36,36%)
2) FUV	2 (9,1%)			2 (9,1%)
3) Sténosis	2 (9,1%)			2 (9,1%)

N=22.

### Intraoperative urinary lesions:

These were 6 (27.3%) ureteral sections, 7 (31.8%) bladder wounds and 3 (13.6%) uretero-bladder lesions (Table 2).

Ureteral lesions were unilateral in 9 (40.90%) cases and bilateral in 2 (9.1%) cases. The left side was affected in 6 (27.3%) cases and the right side in 3 (13.6%) cases. The pelvic ureter was involved in 9 cases while the retro-bladder portion was affected in 3 (13.6%) cases.

These ureteral lesions were repaired immediately by direct suture on a ureteral probe in 3 (13.6%) cases and by reimplantation according to the Politano Leadbetter method in 2 (9.1%) cases. The ureteral catheter was left in place for a mean duration of 13.36 days ( $\pm 4.5$ ). Two were complicated by urinary tract infection treated with antibiotic therapy with ceftriaxone. Bladder wounds were repaired immediately by suturing the bladder. Morbidity consisted of 2 (9.1%) cases of secondary VFF and parietal suppuration, treated and cured.

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### Postoperative urinary lesions:

Twelve patients presented postoperative urinary lesions. These were 8 (36.36%) cases of vesicovaginal fistulas, 2 (9.1%) cases of uretero-vesical fistulas and 2 (9.1%) cases of stenosis. In one patient, there was a combination of FVV and FUV, 2 (9.1%) cases of FUV were located on the retrobladder segment and the other on the pelvic ureter. The ureteral stenosis was located on the pelvic segment of the ureter.

Table 3 presents the clinical description, the biological signs (hemoglobin level, serum creatinine), the surgical treatment methods and the postoperative consequences according to the various postoperative urinary lesions. Warning signs were urine loss in 8 (36.36%) cases of FVV and in 2 (9.1%) cases of FUV. Lower back pain revealed a case of ureteral stenosis. Fever was present in 4 (18.2%) cases of FVV. The general condition was altered (WHO > 2)

in 2 (9.1%) cases of FVV. Pale mucous membranes were observed in 3 (13.6%) cases of VFD. Vaginal speculum examination showed urine discharge from the vagina in 8 (36.36%) cases of FVV and 2 (9.1%) cases of FUV. The associated lesions found in 2 (9.1%) cases of VFF were rectovaginal fistula and parietal suppuration.

The hemoglobin level was 8g/dl or less in 6 (27.3%) FVV cases. The serum creatinine assay revealed a level greater than 110  $\mu\text{mol/l}$  in 2 (9.1%) FVV cases, ie a serum creatinine level of 346  $\mu\text{mol/l}$  and a clearance equal to 16.31 ml/min.

Intravenous urography made it possible to visualize the course of the fistula in 1 (4.5%) cases of VFF and 2 (9.1%) cases of FUV, and associated hydronephrosis in 1 (4.5%) case of FUV. The methylene blue test was positive in 4 (18.2%) cases of VFD.

All postoperative urinary lesions were surgically repaired as a second-line treatment, after the first hospitalization. VFs were approached by laparotomy in 4 (18.2%) cases and vaginally in 2 (9.1%) cases. Both cases of FUV and ureteral stenosis were repaired via the upper route. The 2 (9.1%) cases of FUV were repaired by ureteral reimplantation according to the Lich-Grégoire method. Laparotomy fistulorrhaphy was performed in 2 (9.1%) cases of VF. The low approach, according to the Latzko technique, was performed in 6 (27.3%) other cases of VF.

A therapeutic abstention was opted in 2 (9.1%) cases of VFD because of the poor general condition of the patient and 1 case of VFF associated with rectovaginal fistula was repaired via the vaginal route in visceral surgery. Segmental resection followed by suturing on a ureteral probe made it possible to resolve the ureteral stenosis.

The ureteral catheter was maintained for a period varying from 7 to 21 days while the bladder catheter was withdrawn after a duration of 9 to 21 days. The median length of hospital stay was 19 days with extremes of 11 and 210 days.

The operative complications were: 2 urinary incontinence, and renal failure. Operative mortality was 3 (13.6%) cases.

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**Table 3.** Clinical description, para clinical, treatment and evolution of anatomical lesions (N=22).

Characteristics	FVV	FUV	Total stenosis urétérale	Total n(%)
Warning signs				
1) Urine loss	8 (36,36%)	2 (9,1%)		10 (45,4%)
2) Lower back pain	4 (18,2%)			4 (18,2%)
3) Fever	4 (18,2%)			4 (18,2%)
Clinical signs				

Characteristics	FVV	FUV	Total stenosis urétérale	Total n(%)
1) Performance index (OMS> 2)	2 (9,1%)			2 (9,1%)
2) Paleness	3 (13,6%)			3 (13,6%)
3) Urine discharge from the vagina (speculum)	8 (36,36%)	2 (9,1%)		10 (45,4%)
Associated complications				
1) Suppuration	1 (4,5%)			1 (4,5%)
2) Rectovaginal fistula	1 (4,5%)			1 (4,5%)
Biology				
1) Hemoglobin level $\leq$ 8g/dL	6 (27,3%)			6 (27,3%)
2) Creatinemia $>110\mu\text{mol/l}$	2 (9,1%)			2 (9,1%)
Traitement				
Laparotomy				
1) Lich-Grégoire		2 (9,1%)		2 (9,1%)
2) Fistulorraphy	2 (9,1%)			2 (9,1%)
3) Resection of the stenosis and suture			2 (9,1%)	
Vaginal route Lástzko	6 (27,3%)			6 (27,3%)
Follow up				
1) Urinary incontinence	2 (9,1%)			2 (9,1%)
2) Rectovaginal fistula	1 (4,5%)			1 (4,5%)
3) Renal failure	1 (4,5%)			1 (4,5%)
4) Deth	3 (13,6%)			3 (13,6%)

FVV: vesicovaginal fistula, FUV: ureterovaginal fistula, WHO: world health organization.

## 4. Discussion

Several authors are unanimous on the occurrence of urinary complications after surgery for gynecological pelvic cancers in the departments of gynecology-obstetrics, Urology-Andrology, general surgery and Oncological Surgery [1, 2]. Could knowledge of the anatomical relationships of the urinary tract and pelvic genitalia, pelvic cancers and careful patient preparation reduce the occurrence of these complications? These are all questions that we will address by discussing our results and comparing them to the results of other authors.

From 2007 to 2017, we collected 343 files of women operated on for gynecological pelvic cancer at the Conakry University Hospital, including 22 (6.41%) cases of urinary tract lesions distributed as follows: 12 cases in gynecology-obstetrics from Donka, 4 cases in Urology-Andrology of Ignace-Deen 4 cases in the Oncology Surgery Unit of Donka, 1 case in Visceral Surgery Donka, 1 case in Gynecology-Obstetrics of Ignace Deen.

Eisenhauer et al [4] reported 3.5% of urological complications.

Traoré [8] found a rate of 10.4% of urinary complications. This higher proportion is explained by the fact that all the patients in the Traoré series were previously irradiated. Ureteral and bladder lesions are most often related to extensive dissections and postradical fibrosis [8].

The ages of our patients ranged from 22 years to 77 years, for a mean age of  $41.86 \pm 12.73$  years. According to Bouya [9] in 2011, the average age was  $37 \pm 14.52$  years. These results are approximately the same and this means that the urinary tract lesions were found in women during the period of genital activity who had not undergone early detection to avoid the onset of the conditions that cause postoperative complications.

The majority of patients were housewives. Occupation and marital status are the socio-economic factors contributing to

the incidence and relatively high prevalence of conditions causing urinary tract lesions; among other things, early marriages, the social status of women, poor coverage of conventional prenatal care [10].

Any previous pelvic surgery and radiotherapy can negatively influence the current surgery because of the modification of the anatomical structures (adhesions, post-radiation fibrosis...) making it difficult to access during surgery cancers that could be at the origin of the lesions. These are caesarean sections (4 cases) in the majority of cases; myomectomies (3 cases); a hysterectomy, adnexectomy, appendectomy, and radiochemotherapy.

The initial site of the cancer, the presence of adhesions and the more advanced stage of the cancer determine the difficulties encountered during the surgery by ricochet the occurrence of urinary lesions.

Macroscopic evaluation and staging of operated gynecological cancers was performed by the surgeon in 16 out of 22 patients, ie 72.7%. We noticed:

5 (22.7%) cases in stage IIB with infiltration of parameters; 3 (13.6%) cases in stage IB whose lesions were clinically visible limited to the uterine cervix; 3 (13.6%) other cases at stage IIA in which the lesions were greater than 4cm without infiltration of the parameters; 2 (9.1%) stage IIIA cases: tumor reaching the lower third of the vagina without extension to the pelvic wall; 2 (9.1%) stage IVA cases invading the bladder and rectum, respectively, and only one patient had tumor operated on at stage IB2.

Tumors larger than 4cm without and with infiltration of parameters up to invasion of the bladder and rectum were found in 54.5% of cases. Even if the adhesions and the more advanced stage of the tumors were not found in all the patients, but it nevertheless potentiated the occurrence of the lesions, not to mention the 6 (27.3%) cases not started for reasons that we cannot evoke given the type of study. These patients may or may not have advanced cancers that required extensive surgery leading to urinary damage.

Enlarged colpohysterectomy associated with pelvic lymphadenectomy is the standard surgical method in the treatment of locally advanced cervical cancers after radiotherapy or radiochemotherapy. The lateral enlargement of these hysterectomies such as type Piver III or IV seems to have to be carried out only by necessity according to local findings, knowing that it is always difficult to distinguish between things intraoperatively, between residual tumor tissue at the breast of fibrosis and sterilized postirradiation rearrangements [4].

Enlarged colpohysterectomy with lymphadenectomy, total hysterectomy with or without adnexectomy, regional surgery and pelvicotomy were the main techniques considered by the various surgeons. Of 19 cases of cervical cancer operated on, colpohysterectomy was performed in 11 (50%), 9 of which were Piver type I and II and 2 cases were Piver type III. Enlarged colpohysterectomy with lymphadenectomy is a particularly heavy surgery, the performance of which requires conditions and careful preparation of the patients [8]. The high risk of haemorrhage explains the fact that some patients are challenged by insufficient transfusion support; In terms of duration, it was carried out beyond 4 hours [8]. In our case, the risk of urinary lesions was greater when the enlarged colpohysterectomy with lymphadenectomy of type Piver III and II. The handling of the operating table and the position of the patient are of appreciable help for the exposure of the operating field. If the gynecological position was systematic for the others, the exposure was not easy for us because of the condition of the different operating tables in the different departments. The operation will be all the more difficult as the surgical team are uncomfortable in their position for a long time. Similarly, surgery is more difficult if there is tumor infiltration or tissue fibrosis lateral, deep and around the vascular axes and the urinary tree [13]. This difficulty in the intervention was found in 60% of cases sometimes limiting the surgical procedure and leaving a tumor residue in place [8].

Type of urinary tract lesions:

Intraoperative lesions: These were 6 cases of ureteral sections, 7 cases of bladder wounds and 3 cases of associated uretero-vesical lesions (Table 2).

Ureteral lesions were unilateral in 9 cases and bilateral in 2 cases. The left side was affected in 6 cases and the right side in 3 cases. The pelvic ureter was involved in 9 cases while the retro-bladder portion was affected in 3 cases. These ureteral lesions were repaired immediately by direct suturing on a ureteral probe in 3 cases and by reimplantation according to the Politano Leadbetter method in 2 cases. The ureteral catheter was left in place for a mean duration of 13.36 days ( $\pm 4.5$ ). Two were complicated by urinary tract infection treated with antibiotic therapy with ceftriaxone. Bladder wounds were repaired immediately by suturing the bladder. Morbidity consisted of 2 cases of secondary VVF and parietal suppuration, treated and cured.

These different methods have made it possible to re-establish continuity, to create an anti-reflux system. For a case of reimplantation, we used a pedicled ileal segment

which allowed to correct the ureteral defect which was important carried away by the tumor. The choice of these different methods depended on the experience of the surgeon repairing the lesion.

Postoperative lesions: Twelve patients presented postoperative lesions. These were 8 cases of vesicovaginal fistulas, 2 cases of uretero-vesical fistulas and 2 cases of stenosis. In one patient, there was an association of FVV and FUV. Two cases of UVF were located on the retrobladder segment and the other on the pelvic ureter. The ureteral stenosis was located on the pelvic segment of the ureter.

Bilan clinique:

Clinical assessment:

The main symptom was urine loss through the vagina in 10 cases (45.4%). This is because of the frequent damage to the bladder, which is closely related to the uterus. Zoubelk [11] reports that the classic presenting sign is continuous incontinence (day and night) after recent pelvic surgery. If the fistula is small, then the watery discharge from the vagina along with normal urination may be the only symptom. However, radiotherapy-induced fistula can even develop up to 20 years after the initial attack.

Lower back pain revealed 4 cases of VVF and ureteral stenosis. For Adhoute [12], the diagnostic delay varied from 0 to 540 days. In 2 patients the diagnosis of ureteral lesions was immediate, and the treatment of these carried out during the same anesthesia by the urological team called on the spot. When the diagnosis was made late, in 5 out of 7 cases it was the presence of back pain which led to the diagnosis. In addition to these lower back pain, one patient presented with fever and another with abdominal ileus. In one case, it was an increase in the size of the abdomen that prompted an ultrasound showing a urinoma 18 months after the initial procedure.

Biology report:

The hemoglobin level was less than or equal to 8 g/dl in 6 VVF cases. The serum creatinine assay revealed a level greater than 110  $\mu\text{mol/l}$  in 2 VVF cases, ie a serum creatinine level of 346  $\mu\text{mol/l}$  and a clearance equal to 16.31 ml/min. This assessment shows the impact of the disease on the general condition of the patient in general and in particular the renal function.

Treatment: All the postoperative urinary lesions were surgically repaired as a second line, after the first hospitalization

Approach: VVF was approached by laparotomy in 4 cases and vaginally in 6 cases. Both cases of FUV and ureteral stenosis were repaired via the upper route. The choice of the first route depends on the time of observation, the anatomical type of the lesion, the extent of the lesion and the experience of the surgeon.

Techniques: The 2 cases of FUV were repaired by ureteral reimplantation according to the Lich-Grégoire method. This method helped to remove the fistula, restore continuity and create an anti-reflux system for normal physiological drainage of urine. For two cases of stenosis, we performed segmental resection followed by suturing on a ureteral probe.

Therapeutic follow-up: The ureteral catheter was maintained for a period varying from 7 to 21 days while the bladder catheter was withdrawn after a period of 9 to 21 days. The median length of hospital stay was 19 days with extremes of 11 and 210 days.

The consequences were simple in 4 patients. The operative complications were: 2 urinary incontinence, renal failure. The operative mortality was 3 cases, including 2 operated for stenosis by bilateral ureteral ligation and the 3rd operated for FVV.

## 5. Conclusion

Urinary lesions from pelvic cancer surgery are relatively frequent lesions linked to the close anatomical relationships between the genital tract and the urinary tract; postoperative adhesions, post-radiation fibrosis. The pathological context of cancer plays a role in the occurrence of these lesions. Prevention is the best way and requires a good knowledge of anatomy and surgical techniques. Early diagnosis of gynecologic pelvic cancer is necessary to minimize surgical risks.

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