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Surgical Treatment of Urological Complications of Gynecological and Obstetric Surgeries at the University Hospital of Conakry Guinea

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Abstract

Objective: To analyze the management of urological complications of gynecologic and obstetric surgeries. Material and Methods: We retrospectively studied 39 patients hospitalized in the Department of Urology of the Conakry Teaching Hospital for urological complications of gynecological surgery, during 9 years. The epidemiological, diagnostic, surgical and outcome parameters have been analyzed. Results: The urological complications of gynecologic surgery represent 0.29% of admissions in the Department of Urology. The mean age was 31 years with extremes of 18 and 47 years. Etiological factors were dominated by caesarean section with 74.36% of cases. The main lesions observed were vesico-vaginal and uretero-vaginal fistulas respectively 43.6% and 41.2% of cases. The mean delay of diagnosis was 5 months (extreme: 7 days to 3 years). Urine leakage from the vagina was the main symptom. The surgical treatment consisted in 17 surgeries for vesico-vaginal fistulas, 16 surgeries for uretero-vesical reimplantation, 2 surgeries for termino terminal ureterorraphia, 2 surgeries for vesico-uterine fistulas and 1 surgery for hysterectomy. Healing was obtained in all ureteral injuries and we noted two cases of failure in vesico-vaginal fistula. Conclusion: urological complications of gynecologic surgery remain frequent. They are dominated by the vesico-vaginal and uretero-vaginal fistulas and the main etiology is caesarean section. The treatment is surgical in our context.

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Keywords

Lesions, Bladder, Ureter, Treatment, Surgery

1. Introduction

Lesions of the ureter and bladder following gynecological or obstetric surgeries are commonly found in women because of the close anatomical relationship between the urinary and female genital tracts. These urological complications result not only from large surgical resections required for the management of pelvic genital cancer [1]-[3], but also from simple hysterectomy, myomectomy, caesarean sections or genital prolapse surgeries. Different studies have estimated different incidences of urological complications following gynecological and obstetrical surgery. It ranges between 0.4% and 4.3% in the US [4] [5], whereas in France, gynecological surgery results in urological complications in 0.5% to 10% cases [6]. The urological complications of gynecological and obstetrical surgeries occur both in open and laparoscopic surgeries even with differing lesion management [7]. These constitute a malpractice and legal problem facing urologists and gynecologists. When these intraoperatively-recognized complications are immediately treated, their morbidity is minimal. However, if the complications go undetected, they lead to serious aggravations that may engage the functional prognosis of the kidney or even end up being life-threatening. Thus, the objective of this work was to analyze the management of urological complications of gynecological and obstetrical surgeries in the Urology-Andrology Department of the University Hospital of Conakry.

2. Materials and Methods

This is a retrospective study carried out from January 2005 to December 2013 in the Urology-Andrology Department at the University Hospital of Conakry. It focused on the records of 39 patients hospitalized for urologic complications following gynecological and obstetrical surgeries. The subject of the study constituted the clinical and operative data of the first surgery at the origin of the complication, treatment of complications, and imaging data. The age and origin of the patients, the time of diagnosis, clinical data, intravenous urography and ultrasound, renal function, types of surgery involved, topography of injury, and reparative surgery outcome after an average period of three months were also analyzed in the study. The therapeutic results were judged based on the following criteria:

- Satisfactory: When the patient was found to be dry in cases of vesicovaginal fistulas (VVF) or at the lack of urinary leakage with a restoration of the anatomical and functional integrity of the ureter to intravenous urography in the ureteral injuries.
- Failed: When the anatomical and functional integrity of the ureter was not restored, or fistula was not closed with persistent urinary leakage.

3. Results

During the study period, 13,248 patients were hospitalized in the department of Urology and Andrology, including 39 patients (0.29%) with urinary complication following gynecological and obstetrical surgeries. The average age of the 39 patients was 31 years (range, 18 and 47 years). The diagnosis delay was five months on an average (range, 7 days to 3 years); this period was more than one year in 41% of patients. Of the patients included in the study, 19 (48.72%) came from the community hospital, 11 (28.21%) from a major surgical department in Conakry University Hospital, and 9 (23.07%) from a regional hospital. Clinically, urine leakage through the vagina with or without the need of intact voiding was recorded as the main symptom (**Figure 1**). The cesarean section with 74.36% (n = 29) cases was found to be the main provider of urological complications with varied cesarean indications. Other etiologies and indications are reported in **Table 1**.

The various urological complications observed following gynecological and obstetrical surgeries were dominated by VVF and ureteral-vaginal fistulas with 43.60% (n = 17) and 41.02% (n = 16) of cases, respectively (**Table 2**). The ureteral injuries were all unilateral, which were found on the left side of 15 patients and right side of 3 others. The creatinine level was measured in all patients and was found to be higher in 72.22% of patients with ureteral lesions and 10% with bladder injuries. Ultrasound of the urinary tract was systematically

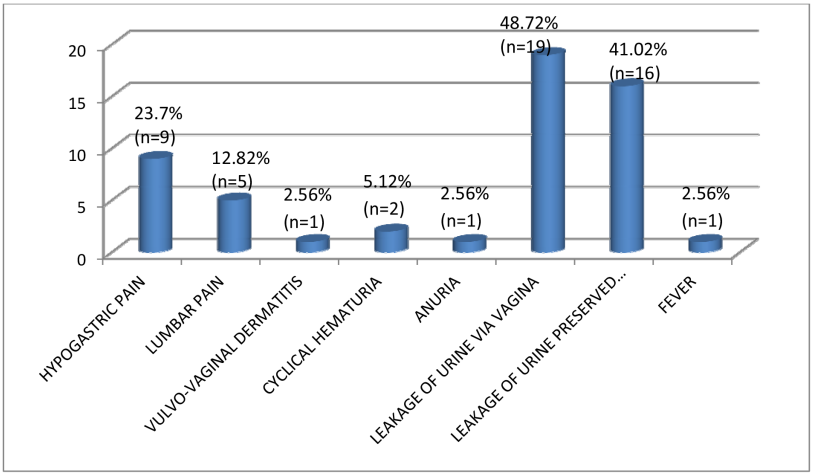

Figure 1. Presenting complaints distribution (n = 39).

Table 1. Etiologic factors distribution.

Etiologic factors	Number of cases	Percentage
Cesarean section for acute fetal distress	17	43.57
Cesarean section for uterus scar	6	15.38
Cesarean section for pre-uterine rupture	4	10.25
Cesarean section for narrow pelvis	2	5.13
Hysterectomy for uterine fibroma	4	10.26
Hysterectomy for uterin prolapsus	3	7.69
Extended colpo-hysterectomy	2	5.13
Myomectomy	1	2.56

Table 2. Urologic lesions distribution.

Types of lesion	Number of cases	Percentage
Vesico-vaginal fistulas	17	43.60
Uretero-vaginal fistulas	16	41.02
Vesico-uterine fistulas	3	7.69
Uretero-uterine fistulas	1	2.56
Ureteral ligation	1	2.56
Vesico-vaginal fistula + uretero-vaginal fistula	1	2.56

done in all patients that demonstrated a unilateral ureterohydronephrosis in 16 patients who had ureteral injuries. The intravenous urography detected silent kidney with ureterohydronephrosis in one of the patients. Therapeutically, different surgical methods of management of urological complications following gynecological and obstetrical surgeries are listed in **Table 3**. The vaginal route was used for the surgical treatment of VVFs in 11 patients, and abdominal repair was done by mixed approaches in five and one patient, respectively.

Therapeutic results considered after a mean follow-up of five months were found to be satisfactory in 94.87% (n = 37) of cases. Thus, all ureteral injuries were healed except in two that underwent vesicovaginal fistulorraphy. In three patients, a parietal suppuration was noted and subsequently treated with antibiotics along with local wound care. Vesico-cutaneous fistula observed in a patient was treated by the maintenance of the bladder catheter for a few more days.

Table 3. Surgical treatment distribution.

Surgical treatment	Number of cases	Percentage
Vesico-vaginale fistulorraphy	17	43.59
Uretero-vésicale reimplantation (UVR)	16	41.03
Vesico-uterine fistulorraphie	2	5.12
Hystérectomy + cystorraphy	1	2.56
Termino-terminale ureterorraphy	2	5.12
UVR + vesico-vaginal fistulorraphy	1	2.56
Total	39	100

4. Discussion

The incidence of lesions of the ureter and bladder consecutive to gynecological and obstetrical surgeries show a higher incidence in Guinea. In our study, we noted 39 cases with ureter and bladder lesions in 9 years. Diallo *et al.* [8] had reported 16 cases for the same period of study in 2001. The growing independent practice of gynecological surgery by in-training residents and fellows and the increased availability and use of diagnostic tools, specifically ultrasound and intravenous urography, could explain the increase in the incidence. Bouya *et al.* [9] have compiled 81 cases of urological complications consecutive to gynecological surgery in 9 years in Congo. In another study, El-Tabey *et al.* [10] reported a larger series of 120 urological trauma patients in 18 years. The average age of our patients was 31 years, which was lower than the average age found in many African series including those by Bennani *et al.* [11], Bouya *et al.* [9], Diallo *et al.* [8], and Fall *et al.* [12], who reported an average age of 34, 37, 40, and 37 years, respectively.

The consultation delay was longer in our study, which exposed the patients to serious complications including ureteral injuries, especially that none of them were diagnosed during the surgery. The lack of specificity of clinical pictures could explain this long consultation delay in our study. The consultation period was shorter in the study by Odzebé *et al.* [13], *i.e.*, 12 days on an average. It must be noted that the diagnosis of ureteral injury during the causal intervention is often difficult. According to Tostain *et al.* [6], diagnosis of ureteral injury was possible only in 15% of cases. In general, the ureteral injury reveals 7 days post-surgery and is rarely diagnosed between 2 and 4 weeks post-surgery [14]. The cesarean section was the most common cause of urological complications in our study. This finding has also been revealed in studies by Bouya *et al.* [9] and Fall *et al.* [12] series with 61.73% and 40% caesarean sections, respectively. In a study by Tanoh *et al.* [15], the complication of emergency caesarean section (parturients coming from a remote hospital on an emergent basis) was found to be 0.92% of VVF. In our study of 39 cases all the ceasarian section resulting in urologic complications were performed originally by junior obstetricians. In accordance with Fall *et al.* [12], we believe that the prevalence of caesarean section was related with its increasing practice by trained gynecologists unlike hysterectomy, which remained restricted to senior surgeons. According to Rajasekar *et al.* [16], urological complications occurred when the "junior" obstetricians were not directly assisted. This observation was confirmed by the study of Tazi *et al.* [17], where obstetricians in training were responsible for the occurrence of bladder injury in 90% of the cases. The caesarean section holds the risk of bladder wound, even if the bladder is probed during the peritoneal opening, vesicouterine detachment or segmento-corporeal vertical incision. The risk is obviously increased during the iterative interventions in case of omental apposition when the posterior surface of the bladder is abnormally high and there is a risk of bladder wound during the parietal incision [17] [18].

In the present study, hysterectomy is considered as the second type of surgery responsible for urological complications. As per the studies conducted by Diallo *et al.* [8], 62.50% of urological complications were consecutive to the intervention mentioned above. Body and Lansac [19] identified six urological complications out of 199 colpohystérectomies. Tostain [6] considered hysterectomy and oophorectomy as the interventions that most frequently complicate the resection of urological lesions.

The lesions observed in our study were dominated by the VVF; this is in accordance with Bouya *et al.* [9]. The diagnosis of these lesions seems to be easy, and VVF is suspected when a permanent urinary leakage occurs

and is confirmed with examination under valves. The fistula usually occur 1 - 3 weeks post-surgery, but it can also occur immediately after the procedure. The VVFs were treated by a fistulorraphy, by vesicovaginal duplication and suture after excision of the sclerotic edges of the fistula. The vaginal route surgical approach was followed for most of the patients as such anatomical path offered good exposure of the fistula. The abdominal approach was reserved for high fistulas associated with intra pelvic lesions to be treated in the same operation.

In the present study, surgery was considered as the definite treatment for the vesico-uterine fistulae that involved the closure of the fistula in two cases, and hysterectomy was associated with the closure of the bladder opening. Hysterectomy was indicated in a patient of 47 years, who was multiparous with a major fibrous scarring making the vesicouterine dissection difficult. Few studies advocated a hormonal treatment suppressing the menstrual flow for a variable period from three to six months or holding the bladder catheter to allow healing of the vesico-uterine fistula [20]-[22]. The different treatment methods (bladder catheter or hormone therapy) were not possible in our series due to the longtime of evolution assuming a fibro-sclerotic re-organization of the fistulous tracts.

The ureter lesions observed in our study were in the form of uretero-vaginal and uretero-uterine fistulas or ureteral ligation. In the gynecological surgery, the incidence of iatrogenic ureteral wounds was in the range of 0.013% to 1.8%. This surgical discipline alone accounted for 47% - 55% of all postoperative ureteral wounds identified in the literature [23]. The incidence of the ureteral wound was more frequent in the cases of open surgery [24] than in laparoscopy [25] or endoscopy [26]. The most common lesions were caused by ligation clips, section, crushing, resection and stripping by dissecting and altering the vasculature [27]. In ureteroscopy, avulsion by stripping while removing the ureteroscope ranks first [28] before the perforation that could lead to further scarring stenosis. Lesions caused by coagulation injuring ureteral vascularization are the most common in laparoscopy [29].

The management of ureteral injury is based on its topography, extent, the delay between the occurrence and time of diagnosis (intraoperative, early or late), mechanism, and patient comorbidities. There are multiple therapeutic options that exist. Apart from the endoscopic methods (J stent or percutaneous nephrostomy), one can perform a direct approach for surgery of the lesion to realize an ureterovesical reimplantation. The reimplantation can be done with or without the psoic bladder, uretero-ureteral end-to-end anastomosis or end-to-side between the injured ureter and healthy urethra or even urétéroiléoplasty when there is any serious defect [23] [27]. The latter technique remains a last resort given its morbidity [30].

In our series, all patients underwent open surgery because of the antiquity of the lesions. Ureterovesical reimplantation was performed in 16 cases, including 4 on-flap Boari Küss and 3 on the psoic bladder. This reimplantation was preferred when the lesion was less than 2 cm and distally positioned (<3 - 5 cm above the ureterovesical junction) [23]. Above these limits, a bladder elongation plasty of the low ureter to allow a tension-free relocation should be associated using the psoic bladder technique or bladder flap cannulated according to Boari-Küss [27].

The resection anastomosis uretero-ureteral performed in two of our patients was used for short lesions located at a distance from the ureterovesical junction. Technically, the resection should switch to healthy tissue, and the anastomosis should be broad, sloping, and without traction on a JJ stent.

In our study, 94.87% of satisfactory results were obtained. All ureteral lesions were healed, but two failures were noted after vesicovaginal fistulorraphy. In the previous study by Bouya *et al.* [9], the results were satisfactory in 96% of ureteral injuries and 90% for bladder lesions.

5. Conclusion

Urological complications resulting from gynecological and obstetrical surgeries are disabling conditions that are still found to be relevant. The causes are dominated by caesarean section and major VVF and ureteral injuries that remain unrecognized. In the present context, the late diagnosis has led to the need for surgical treatment. The best treatment for urological complications of gynecological and obstetrical surgeries is prevention, which requires a thorough knowledge of the anatomy and compliance with good surgical practices.

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