FISTULAS SECONDARY TO GYNECOLOGICAL AND OBSTETRICAL OPERATIONS

ABSTRACT: The authors present urogenital and rectogenital fistulas treated at the Department of Obstetrics and Gynecology in Novi Sad in the period from 1976 to 1999. The study comprised 28 cases of fistula out of which 17 were vesicovaginal, 3 ureterovaginal, 1 vesicorectovaginal and 7 rectovaginal. During the investigated period there were 182 Wertheim operations, 3864 total abdominal hysterectomies, 1160 vaginal hysterectomies and 7111 cesarean sections. The vesicovaginal fistulas were most frequent with the incidence of 0.33%, whereas the tocogenic fistulas did not occur. Urogenital fistulas secondary to radical hysterectomy are extremely rare thanks to the administered measures of prevention during the surgical procedure.

KEY WORDS: fistulas, gynecological surgery, urology

INTRODUCTION

The fistulas occurring after either gynecological or obstetrical operations can be divided into two basic groups:
— genitourinary,
— other locations.

In some undeveloped countries, the condition of permanent urinary incontinence has been a frequent consequence of nonprofessional conduct of labor (tocogenic fistulas), whereas in developed countries, fistulas most often occur secondary to gynecological operations resulting from injuries to the ureter, urinary bladder and urethra. The treatment of genitourinary fistulas can be complicated and success depends on medical treatment, surgical technique and the experience of the operator.
MATERIAL AND METHODS

Fistulas secondary to gynecological operations and their prevention

Most surgical procedures performed in the region of the uterine cervix bear risk of injury due to close anatomic-topographic relations with the ureter and urinary bladder. Trauma injuries during the operation may occur in abdominal radical hysterectomy, abdominal hysterectomy, myomectomy of low-located myomas in the anterior uterine wall, endometriosis, chronic inflammatory tumors, sepsis, altered anatomic relations in disturbed statics of genital organs.

In classic hysterectomy it is of importance to have good knowledge of the vesico-cervical region. Upon the incision of the vesicouterine plica, it is important to enter the proper “cleavage” between the bladder and the anterior vaginal wall. The vagina, cervix and bladder are covered by a layer of endopelvic connective tissue in difference from the firm whitish cervicovaginal fascia. The knowledge on these anatomic relations is of utmost importance in prevention of vesicovaginal fistulas. It is most appropriate to use sharp scissors to separate the bladder from the middle part, in the direction to the vesico-cervico-vaginal ligament (anterior parametria). In case the bladder is separated “bluntly” by a gauze pledget, no matter if entering the proper area, unnecessary injuries and tears may occur with the consequential bleeding. When an injury to the urinary bladder is not recognized and treated in time, an involuntary urine leakage will occur soon following the operation. Under different circumstances, the unrecognized bladder injury may cause the development of a hematoma, which is a convenient soil for the development of infection. In case that the proper drainage across the vaginal vault has not been established, the bladder wall suffers the pressure, necrotizes and the urinary fistula develops between the urinary bladder and the vaginal vault.

Vaginal operations may also be accompanied by possible urinary tract injuries. Most urinary bladder injuries occur during the incision of the vesicouterine plica. The urethrovesical, layer has always been disposed to injury risk in anterior colporrhaphy, both for direct trauma during operation and possible late necrosis caused by improper placement of the sutures (P. Draca et al., 1979).

Vaginal hysterectomy and Manchester operation bear great risk of injury to the ureter because of their close location to the adjacent uterine cervix. Therefore during the vaginal hysterectomy, after the incision of the vesicouterine plica, the urinary catheter is inserted, elevating the urinary bladder and separating the ureters from the uterus during the surgical procedure (Draca P. et al., 1981, 1984, 1986).

The prevention of urethrovaginal fistulas in radical abdominal hysterectomies is done by preparation of the “Novak’s roof” and ureteral mesentery as well as by extraperitoneal abdominal drainage of the parametrial fossae (Draca P., 1973, 1974, 1979). In preoperative intracavitary irradiation for uterine carcinoma, the most optimal time for operation is the period following the three post-irradiation weeks (Draca P. et al., 1980). This is the period when
the hyperemia disappears and the postoperative fibrosis has not yet developed. Although the preoperative irradiation improves the five-year survival rate, the very procedure contributes to increased incidence of fistula development.

The following procedures are of significance in the prevention of ureteral injuries during gynecologic operations:

— Complete separation of the urinary bladder and anterior wall of the uterine cervix.

— Clamping, dissection and ligation of the vesicocervical ligament divide the ureter form the operative field, separating it from lateral walls, decreasing the risk of ligation of the terminal part of the ureter and its angulation.

— Correct and complete mobilization of the ureters enables their separation from the lateral walls of the uterus, where clamps and ligatures to a uterine are placed, often resulting in injuries of the ureter.

In intraligamentous myomas operations, the ureter is usually placed either downwards or downwards and out and it is usually adherent to the pseudocapsule of the myoma. The safest procedure is an incision of the peritoneum in the posterior wall of the broad ligament — at the level of a. uterina, and its ligation and dissection with the subsequent enucleation of the myoma. The ureter is left free with its normal adjunction to the peritoneum. The enucleation should be done within the capsule as to avoid injuries to the ureter or its adventitia.

In atypical operations of intraligamentous cysts, tubo-ovarian inflammatory tumors attached to the posterior sheat of the broad ligament or endometriosis spreading to the lateral parametria, it is most important to identify the ureter at the level of its meeting the a. iliaca and follow its descending path. This is a delicate part of the operation with the expecting bleeding episodes and possible injuries to the ureteral adventitia — therefore, a separation of the ureters form the peritoneum has been recommended.

Particular attention is needed in peritonization of the edges of the broad ligament. The ureter can adhere to the posterior sheath of the broad ligament immediately beyond the ligature of the infundibulopelvic ligament. The approachment of peritoneal edges enables the ligature of the ureter.

In vaginal approach to the operation of vesicovaginal fistulas, it is necessary to identify the relation of the fistula and the ureteral orifice. Cystoscopy and urography have to be performed in order to identify the existing anatomic condition. If the orifices are very close, it is necessary to introduce the urinary catheter.

_Tocogenic fistulas and injuries to the urinary tract during labor_

Tocogenic fistulas have been practically missing in pathological conditions in our environment because of an active attitude of the obstetrician in conducting the labor. Due to the increased incidence of operative completion of delivery — cesarean section and repeated cesarean section — possible injuries to the ureter during the low segment transverse cesarean section have to be taken into account, particularly in case of a tear of the uterus spreading to the
lateral parametria, sometimes involving the ureters which are firmly attached
to the lateral uterine wall. Recognition of these injuries is aggravated by bleeding
from the adjacent torn venous vessels. Therefore in cesarean section, the
tears in the uterus spreading to the lateral parametria always need revision, be-
cause unrecognized injuries to the ureter invariably lead to the development of
fistulas and to other severe complications.

Table 1 — Urogenital fistulas registered at the Department of Obstetrics and Gynecology in Novi Sad in the period 1976—1999

<table>
<thead>
<tr>
<th></th>
<th>HTA</th>
<th>C. S. HTA</th>
<th>Colporrhaphy</th>
<th>Episiotomy</th>
<th>Sling</th>
<th>HV</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vesicovaginal</td>
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<td>4</td>
<td>1</td>
<td>1</td>
<td></td>
<td>3</td>
<td></td>
<td>17</td>
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<tr>
<td>Ureterovaginal</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Vesicorectovaginal</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Rectovaginal</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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</tbody>
</table>

Table 2 — Other sites of urogenital fistulas

<table>
<thead>
<tr>
<th></th>
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<th>Colporrhaphy</th>
<th>Episiotomy</th>
<th>Sling</th>
<th>HV</th>
<th>Unknown</th>
<th>Total</th>
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<td>Abdominal wall</td>
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<td></td>
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<td>4</td>
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<tr>
<td>Ileoparietoabdomen</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Vaginoparietoabdomen</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Perineovaginal</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Cervicovaginal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Perineal</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

During the investigated period, there were 138 Werthwim operations, 3864 total abdominal hysterectomies (HTA), 28 subtotal abdominal hysterectomies, 1160 total vaginal hysterectomies (HTV) and 7111 cesarean sections (CS).

In the investigated sample, vesicovaginal fistulas occurred with the highest incidence — 17 or 0.33% of the total number of abdominal hysterectomies which were the most frequently performed operations. Conversely, there was not a single case of genitourinary fistula in vaginal hysterectomies.

Abdominal hysterectomy is an operation which any young gynecologist must be able to perform, as far as it needs a minimum of surgical knowledge of any gynecologist and obstetrician, but the lack of experience and the failure to recognize an injury while an operation is still in progress often cause the development of fistulas. Inflammatory processes in the small pelvis, endometriotic lesions and disturbed anatomical position in case of large uterine myomas may also be a cause for development of fistulas.

The fistulas developing secondary to radical hysterectomy — ureterovaginal fistulas — occurred in 1.64% (3 patients) localized at the distal part of the ureter. All three patients underwent preoperative cavital irradiation. One patient developed a rectovesicovaginal fistula.
The fistulas occurring secondary to cesarean section always developed following the local infection or unrecognized injury during operation. Two patients with the repeated cesarean section suffered a tear in the uterus spreading towards the lateral parametria, involving the ureters which were firmly attached by connective tissue to the lateral uterine wall. In both patients the injuries to the ureter were recognized when the operation was still in progress, so that the end-to-end-anastomosis was performed.

*The procedures applied in the case of vesicovaginal fistula*

Following the recognition of a fistula, a Foley’s catheter is inserted in the urinary bladder which often serves as a therapy — in some cases of small-size fistulas, a spontaneous closure occurs following the insertion. If there is no spontaneous closure, the catheter remains inserted till the operation. Immediately before the operation, the location and size of the fistula as well as its relation to ureteral orifices are determined by cystoscopy. Ultrasonography or intravenous pyelography are administered as to determine the condition of the urinary tract. The presence of hydronephrosis and hydroureter point to the development of a scar at the level of ureteral orifice caused by the fistula. Preoperative testing such as urine culture and antibiogram are necessary. The operation timing is scheduled individually, the optimal timing being 3—6 months after the previous operation. The choice of the procedure applied to vesicovaginal fistulas is significant and it is influenced by the specialty of the operator. Gynecologists most often employ the transvaginal approach under condition that the vaginal vault is mobile. If the fistula is placed high in the vagina and fixed, being associated with a mass of surrounding connective tissue, the transperitoneal approach must be employed.

In the vaginal approach to the operation of the vesicovaginal fistula, it is necessary to enable the relaxation of the pelvic floor, which leads to a descent of the vagina. Above and beneath the fistulous opening, a longitudinal incision is made 2 to 3 cm long; the vaginal mucosa is prepared and separated from the urethral wall. It is essential to establish the mobility of the urinary bladder at the level of the fistulous opening as to provide a successful wound healing. The edges of the fistulous canal are incised and the urethral wall sutured by interrupted stitches in two layers using absorbable material and taking care that the edges of the urinary bladder do not turn inside. The hemostatis must be exact as to avoid the development of hematoma and infection. The vaginal mucosa is sutured using nylon material and mattress sutures with no empty space between them. Nylon sutures are removed three weeks later. The urinary bladder is drained for the next 14 days with the adequate antibiotic therapy and uroantiseptics. This procedure was administered in 21 cases of vesicovaginal fistula with only one case of recurrence, which was solved by a reoperation using the same procedure.
RARITIES AND ADVICES

For the end, we shall present 4 cases from our long practice, 2 patients from the years 1958 and 1960. The first patient (1958) was admitted to the Department for adnexal tumor. She was prepared for operation by the protocol used at that time, without preoperation chromocystoscopy or pyelography. Explorative laparotomy revealed a kidney that descended into the small pelvis. In another patient (1960), a ligature of the ureter happened during the peritonization following the adnexectomy. The ligature was recognized on the second day, but the patient died of uremia. During the preoperative preparation, no necessary urologic examinations were administered. It is our experience that preoperative urologic examinations such as cystoscopy and IPV necessary.

Out of rare fistula locations, we would like to mention the two postoperative ileocutaneous fistulas occurring secondary to the operation of ectopic pregnancy (tubal rupture) associated with a massive abdominal hemorrhage. Both patients with a fistulous opening in the abdomen discharged a green foamy excretion of liquid consistence and unpleasant smell. The postoperative external intestinal fistula was diagnosed and it was managed by resectio intestini ilei cum fistula et anastomosis termino-terminum (Ulić, D. et al., 1981). Subsequent analyses lead to a diagnosis of a fistula developed for ligation of a part of the ileum (meteoristic intestine) during the peritonization of the parietal peritoneum.

CONCLUSIONS

— Vesicovaginal fistulas are most often associated with gynecological operations (0.33%).
— The administered measures of prevention and sound surgical knowledge of the operator result in a low incidence of developing fistulas.
— Similarly, low incidence of tocogenic fistulas points to a good care and active conduct of the labor.

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**ФИСТУЛЕН КОД ГИНЕКОЛОШКИХ И АКУШЕРСКИХ ОПЕРАЦИЙ**

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Резиме

Аутори приказују урогениталне и ректогениталне фистуле на Клиници за гинекологију и акушерство у Новом Саду у периоду 1976—1990. године. Анализа обухвата 23 фистуле: 17 везиковагиналних, 3 уретеровагиналних, 1 весикоректовагиналну и 7 ректовагиналних. У том периоду урађено је 182 Wertheim-операцije, 3864 тосталне абдоминалнхистереktомије, 1160 вагиналних хистереktомија и 7111 царских резова. Најчешће су забележене весиковагиналне фистуле 0,33%, док токовитих фистула није било. Код радикалних хистеректомија урогениталне фистуле се изузетно ретко срећу као последица превентивних мера током хируршког поступка.