

*Materials of Conferences***INTRAPERITONEAL COMPLETE RUPTURE OF BLADDER CUPULA (BOTTOM), COMPLICATED BY TEN-DAYS URINE PERITONITIS**

Baizharkinova A.B., Ergaliyev K.E.,  
Highrullina Z.S.

*Western-Kazakhstan state medical university of Marat  
Osmanov and Railroad hospital of the city of Aktobe,  
e-mail: bayzharkinova@mail.ru*

This article describes a case of successful treatment of a patient in a working-capable age, delivered from passing tracks by a medical assistant to therapeutic department of Railroad hospital of the city of Aktobe with a directing diagnosis: liver cirrhosis, ascites. After initial inspection of patient head of therapeutic department revealed delay of urine and invited urologist who introduced a soft catheter into bladder and left for consultation to a different medical institution. About 10 liters of urine was discharged, during the consultation with head of surgical department the catheter was advanced deeper, and discharge of blood drop with pus was observed, it allowed the specialists to suspect rupture of bladder and exclude the diagnosis ascites. Condition of the patients was characterized as heavy, acetone smell was coming from his mouth, intoxication clinic was observed, anamnesis on trauma was impossible to collect, as though the patient was conscious, he was sleepy. Palpation of stomach showed symptoms of peritonitis, but quantifiable data was stable. Skin in the area of groin, thigh, and external organs showed no pathologies. In urgency the patient was transferred to department of anaesthesiology and reanimation with primary diagnosis: closed trauma of stomach, intraperitoneal rupture of bladder, complicated by urine peritonitis and intoxication. During pre-surgical period, apart from laboratory examination, an urgent R-gram of pelvis was made, bone pathology was not revealed. For technical reasons additional consultation with urologist and ultrasound examination was not possible. After pre-surgical procedure the patient has been exposed to lower-middle laparotomy under general anaesthetization. After blockade of mesocolon with 80 ml of 0,25 % sol. Novokaini and during revision of stomach cavity pathologies of other organs were not found. Intrasurgically a complete intraperitoneal rupture of bladder in the area of cupula in sagittal direction was confirmed, in such cases bleeding is usually insignificant due to a low vascularization in bottom area. In this particular case urine ejection into stomach cavity took place through the wound of bladder, and it provided for contraction of small vessels and decrease in bleeding in rupture area. In the area of rupture and on the back surface of bladder rupture edges were covered with fibrin (this fact testifies for the inveterate nature of injury), dull end

of rubber catheter was seed from the wound. The implemented procedures included: aspiration of urine remains, sanitization, aspiration, and drainage of stomach cavity in 4 places. Then edges of rupture were "refreshed" from fibrin incrustations, bladder wound was closed according to the general methodic, and epistostoma was placed. During the post-surgical period desintoxication therapy was implemented, the surgeons successfully managed treatment of post-surgical paresis of bowels via conservative method. Removal of drainages from stomach cavity, skin sutures, and epistostoma was carried out in corresponding periods according to laws of surgery. A complete recovery came in 2,5 months, the patient was released from heavy work for 1 month.

PS: According to railway-engineer witnesses from the passing track who visited the patient, the injury took place in everyday life of the patient, he fell down in condition of alcohol intoxication being on vacation and did not call for medical assistance. His neighbor, after he learned about the condition of the patient, called for medical assistant after 10 days, thus the patient was delivered to the head railroad hospital.

Key words: intraperitoneal complete rupture of bladder cupula; 10-days urine peritonitis, acknowledged as ascites; sanitization and drainage of stomach cavity; closure of bladder wound, epistostomy.

**Urgency:** During the recent 50 years of practice in surgical department of railroad hospital among operated patients with bladder traumas with the following complications: 10-days urine peritonitis, it has been the first case in which the patient was saved. According to literature data, even in case of isolated damage of bladder lethality equaled 4,4%. During the recent 10 years articles, devoted to ruptures of bladder with such complications, have not been published.

The main cause of bladder ruptures is trauma. V.A. Klyuzhev (2001) illustrates that bladder injuries and urine-discharging ways are very rare in peaceful times, it is defined by its anatomic location in encirclement of pelvis bones. However, in case of anthropogenic traumas bladder damages grew by 7%, and in case of traffic accidents bladder injuries take place in 86–90% of events, among those 70–80% of them are hazardous for life, and in combined traumas bladder ruptures form 25,7%. The Cause of rupture is a direct injury along the lower part of stomach: a kick, hit by a moving transport, fall from a certain height, overrun by an automobile, etc. More rare are indirect injuries: a strike to sacrum, buttock, thigh.

Works of such authors as (T.A. Revenko, 1981; P.S. Jalilov, 1985; S.B. Petrov, 1999; Tiquert R. et al., 2000) show us that bladder rupture depends not

only on a hit, but also the speed of traumatic force. In case of alcohol intoxication bladder rupture takes place much more frequently and grows two times (I.G. Ryabtsev, 1975; N.A. Shor, A.A. Chichetka, 1989), especially among men of able-to-work age. A cause of a complete rupture of bladder in case of an accidental trauma among the injured in condition of alcohol intoxication is lack of protective senses. Intraperitoneal rupture of bladder can happen to a person with an overfilled bladder in case of an accidental downfall under the own weight of the injured person or in case of a hit to the stomach with a dull object. Practical significance has the division of all bladder damages into extraperitoneal and intraperitoneal. Depending on the mechanism of trauma damage of bladder can be, as mentioned above, complete and incomplete. In case of incomplete damages partial rupture of bladder wall takes place: mucous membrane, sometimes mucous membrane and muscle tissue with preservation of wholeness in serous cover. On the contrary, in case fractions of pelvis bones are introduced from external environment, rupture of adventum and part of muscle tissue takes place with preservation of wholeness in mucous membrane. The authors claim that incomplete ruptures can further transform into complete due to overflow of bladder with urine and sharp increase in intra-bladder pressure. Intraperitoneal fractures usually happen with fractures of pelvis bones, the mechanic of such rupture is basically defined by traction of pelvis ring at the moment of fracture with an overtension in ligamentous apparatus of bladder. As a result, rupture of bladder wall with rupture of ligaments takes place. More rarely bladder rupture happens due to a damage, caused by bone fractions of pelvis bones. As a rule, intraperitoneal ruptures of bladder aren't succeeded by fractures of pelvis bones, as the main part in the mechanism of trauma is played by hydraulic blow in an overflowed bladder.

In his "Guide on urology" of 1998, academy member N.A. Lopatkin illustrates location of bladder in small pelvis, and its volume equals 400-500 ml. In case of overflow of its volume increases hydrostatic pressure, and bladder walls become thin. The thinner bladder wall is due to a chronic urine delay, the greater is atrophy of bladder muscles and easier is rupture. That is why bladder ruptures are more frequent in case of senile atrophy of bladder, prostate adenoma, certain pathologies of bladder (diverticulas, tubercular ulcers, cancer, etc.).

A weak point and mobile part is cupula (top or bottom) of bladder, in this place rupture takes place in 35% of cases, and it happens on bladder wall in 42% of events. In peaceful times a combined trauma with damage of other internal organs leads to heavy complications that result in death of patient, death rate equals 20%. During war death rate equals 4,4% in case of isolated damage of bladder.

Of all intraperitoneal injuries bladder rupture among mature population happens in 5-12% of

cases, and in 4,4-11,5% of cases – among children. Bladder traumas are divided into open injuries (12-33%) and closed traumas (67-88%), penetrating, non-penetrating, intraperitoneal, extraperitoneal, complete and incomplete damages of bladder. As in case of "non-complicated" form of trauma ruptures usually happen at the top and back wall, they are mostly intraperitoneal, in other words, do not lead to ruptures of other regions of urine-discharging ways or organs of stomach cavity.

Among all patients who experienced surgery from traumatic damages of stomach organs, bladder traumas form 2% of cases.

Intraperitoneal complete ruptures of bladder happen in 25% of cases along sanital or longitudinal direction, can be single or multiple and have no definite shape. In case a rupture happens in sanital direction, bleeding is almost absent, the reason of that is lack of large vessels in this area, and small ones contract quickly in tissues of bladder. In case of intraperitoneal rupture concentration of urine increases as it is absorbed by stomach walls and internal organs, at the same time, protein exchange is disturbed, chemical reaction takes place, it causes aseptic peritonitis, in case of secondary infection it transforms into pus peritonitis. Such kind of peritonitis leads to death of patient in case medical assistance is not provided to them urgently. Complete and incomplete ruptures of bladder peritoneal clinic symptoms might not display immediately. In case of intraperitoneal ruptures of bladder signs of peritonitis develop in 10-12 hours since the moment of trauma. Signs of urine intoxication and urosepsis that are revealed on days 2-3 after trauma are also lethal unless an urgent surgery is carried out.

Extraperitoneal rupture is observed among patients with fractures of pelvis bones in 55-57% of cases, among those 36-39% are closed intraperitoneal ruptures, and 6% are combined type of traumas. No less heavy extraperitoneal ruptures are complicated by fractures of pelvis bones and heavy shock, from which is often hard to remove. Nitrous slag is accumulated, proteins break down, sodium of potassium, chlorides, organic acids increase in their volume, acidosis emerges. Water-salt exchange is disturbed. As a result of nitrous intoxication uraemia grows. A patient suffers from weakness, sleepiness, vomiting, diarrhea, edema, short breath, headaches, skin itching, memory loss, ammonia breath.

After three days of urine peritonitis nephritic deficiency takes place. Tongue becomes dry, the patient is thirsty, they feel sickness, urea and creatinine concentration in blood samples increases up to 100-200 and 12-15 mg/ml. rupture of bladder usually happens in longitudinal direction as longitudinal muscles of detrusor are significantly more solid than transversal ones. Bladder damages in case of fractures, on the contrary, often create holes of incorrect shape.

Combined ruptures of bladder happen in case of vast injuries, compression of pelvis ring, and bladder overflow. In case there is complicated damage there is no clear localization of rupture, therefore, ruptures can be intra- and extraperitoneal, though the latter are more common. A special form of ruptures is damage that some authors refer to bladder damage, and others – to damage of urethra. We speak of disconnection between the bladder and urethra.

According to bibliographic data, iatrogenic damage of bladder can happen in 0,23–0,28% of gynaecological surgeries, in other cases iatrogenic trauma happens in 30% of cases. In case iatrogenic damage of bladder happens during surgery, it is determined faster than other damages of urinal-discharge channels.

Demonstrative medicine is found upon cystoscopy, retrograde cystography, emunctory urography (cardiotrust, venographin, solution of Sergosin, 2- or 3-atomic X-ray-contrast liquids), standard radiography of computer tomography.; mostly R-gram of pelvis bones, for example, in case of determination of its fractures, can suggest a conclusion of extraperitoneal rupture. In about 60% of cases damage of bladder, cause by counterhit, is observed in the area across place of fracture and near it. Extraperitoneal ruptures of bladder form 54–56% of all cases of bladder rupture. Combined intra- and extraperitoneal ruptures happen in 5–8% of cases of bladder rupture. Usually they are determined during surgery. Intraperitoneal rupture of bladder is determined with ultrasound inspection and common introduction of catheter into bladder. Without operative intervention intraperitoneal bladder ruptures usually end in lethality.

**Clinic.** Closed injuries of bladder have no typical clinic image. During the first hours after the damage patients are usually shocked, though cases are described when even after a heavy trauma of bladder shock condition was not established and patients walked to the hospital. Shock, as well as pain is not a specific sign of bladder rupture and can be caused by damage in other organs.

The basic symptom of bladder rupture is deficiency of urination that is expressed in ceasing act of urination, painful tenesmus in area of bladder and straight bowel. Blood drops discharge from urethra is not typical for bladder damage, as it can also be observed in case of urethra damage. Unlike rupture of bladder, ruptures of urethra usually cause significant urethrorragy and strong urges for urination.

In case of extraperitoneal ruptures pressure of urohaematoma in surrounding tissue causes a false urge for urination and discharge of blood drops from urethra. Palpation of stomach usually reveals sharp painfulness in the area of symphysis, above the bosom a painful blunting of percutory sound and tension of front stomach wall in its lower departments is defined. Direct-bowel or vaginal inspection through straight bowel or vagina reveals stagnation of tissues, and it indicates to urinal infil-

tration, on days 2–3 after trauma symptoms of urine leakages and urine infiltration into the bladder-surrounding tissue are observed. Emerge skin redness and edema of hypodermic fiber in the area of symphysis, lower part of stomach, scrotum, and penis. These areas become extremely sensitive under palpation and in motion. Urine infiltration can spread into the area of small pelvis, perineum, straight bowel, thighs. The developing urosepsis leads to death even in case of extraperitoneal damage. As damage of bladder is often combined with fractions of pelvis bones, symptoms of pelvis bone fracture are also observed in these cases. In case of any pelvis bone fracture it is necessary to establish if there is no simultaneous damage of bladder and urethra.

In cases of intraperitoneal rupture general symptoms of peritonitis can be observed. They are caused by discharge of urine into stomach cavity and stomach growth: pains in the area of bladder with irradiation into inguinal areas, tension of the front stomach wall. Lack of urine and presence of blood in urine during catheterization is caused by sealing of bladder wound by epiploon or bowel loops, besides, in certain cases condition of a patient might improve, and diagnostics will become complicated. An important symptom of bladder rupture in such cases is lack of definite limits of dullness for percussion sound.

In case of intraperitoneal rupture of bladder thesismus and disuric sign might not be present if urine discharges freely into stomach cavity, and a sharp pain emerges along with urination disturbance and development of peritonitis. Condition of patients degenerates rapidly. The symptoms are: sickness, vomiting, delay of stool and gases. If much time passes since the moment of rupture, along with urine exudate liquid accumulates in stomach cavity. Bowel peristalsis is not heard through auscultation. Patient's temperature increases, tachycardia develops.

In case of open damage of bladder urine discharges from the wound, and the whole image is clear. Urine peritonitis happens together with secondary infection, signs of pus intoxication, the latter can result in abdominal sepsis, urosepsis, and poly-organ deficiency. In case the rupture is combines with pelvis bones fracture, intraperitoneal bleeding is possible. Late diagnostics can complicate treatment.

**Diagnostics.** Diagnosis of bladder damage is based upon the data of anamnesis, the described clinical symptoms, and hematuria in urine analysis. In order to confirm the diagnosis data of catheterization, cystoscopy, cystography, emunctory urography, and R-graph of pelvis bones is used. During catheterization of bladder urine either does not discharge at all, or discharges as a thin stream with addition of blood. Sterile liquid, introduced into bladder through catheter, does not discharges back or discharges as a thin stream. In case of intraperitoneal rupture of bladder, after catheter is advanced



deeper into it, a large amount of turbid bloody liquid (urine, blood, exudate from stomach cavity) can discharge unexpectedly. Cystoscopy is implemented for intraperitoneal rupture in rare cases when other methods of diagnostic aren't able to provide clear information, and can be applied only in for partial or small damages, when bladder can be filled for examination. Ultrasound examination produced a mistake in 10% of cases. The leading part in diagnostics plays cystography: leakages of contract roentgen liquid outside of bladder are registered.

In verification of an open damage of bladder a great significance have probes with colorants (solution of indigocarmine-methylene blue) that confirm discharge of urine from the wound.

**Treatment.** According foreign scientists, only intraperitoneal ruptures require surgery, all other types of ruptures are treated conservatively. Of course, every problem of treatment is solved individually for a given patient, especially when there is a possibility to use modern medical technology.

A special feature of surgery for intraperitoneal rupture of bladder is that the damage can happen not only in bladder itself. Therefore, during laparotomy it is necessary to begin with revision of stomach organs and urination system. If less than 2 hours pass since the injury of bladder, and urine peritonitis has not yet happened, treatment can be limited to introduction of microirrigators for introduction of antibiotics, the wound is closed completely with placement of epicystostomy. In case urine peritonitis has happened, drainages are left in 4 places for washing, 8-10 liter of sterile isotonic solution of sodium chloride are introduced through the higher drainages during post-surgical period, the washing liquid is discharged from stomach cavity through the lower drainages.

**Conclusion:** Our article presents a rare case of 10-days old closed trauma of bladder that was received by patient in alcoholic intoxication. On insistence of medical assistant the patient was delivered to therapeutic department of railroad hospital with diagnosis cirrhosis of liver, ascites. A simple method of examining the patient – catheterization of bladder established the diagnosis: rupture of bladder, urine peritonitis, intoxication. During the surgery a complete isolated intraperitoneal rupture of bladder cupula was established. Other pathologies of stomach cavity organs and pelvis bones were not registered. Post-surgical adequate treatment led the patient to a complete recovery of the patient.

During the period of 50 years of work in surgical department of our railroad hospital we have operated patients with different ruptures of bladder that were found in literature, but were actually faced with for the first time. Intraperitoneal complete rupture of bladder, complicated by 10-days urine peritonitis was not found in the accessible literature. Severity of the patient's condition was evaluated adequately by our specialists who

even called specialists in for consultation. Guided by the practical experience, pre-surgical diagnostics of bladder damage, well-maintained pre-surgical preparation in reanimation department, and surgery itself: sanitation of stomach cavity with drainage, closure of bladder cupula wound with placement of epicystostomy, post-surgical treatment, and the corresponding adequate post-surgical treatment has led us to a positive result. According to the received data, after the surgery the patient continued working until retirement and now is having a well-deserved rest.

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The work is submitted to the International Scientific Conference “Innovative medical technologies”, France (Paris), March 18–25, 2015, came to the editorial office on 15.02.2015.

#### **CERTAIN ASPECTS OF DIAGNOZING AND TREATING ACUTE APPENDICITIS AMONG THE PREGNANT**

Baizharkinova A.B., Iztleuov E.M., Ismailova I.V., Aibasov N.B., Nurgazin K.S.

*Department of general medical practice № 2, railroad hospital of Western-Kazakhstan state medical university of Marat Ospanov, City of Aktobe, e-mail: bayzharkinova@mail.ru*

The article presents data of retrospective analysis according to histories of 47 pregnant women after appendectomy who were released with a positive outcome from surgical department of railroad hospital in 2013–2014, when totally 810 patients with acute appendicitis were operated. During emergency duties in surgical department of the railroad hospital 2 times a week in different periods of pregnancy part of the operated women with diagnosis of acute appendicitis equalled 5,8% of total number of patients.

**Urgency of the problem:** According to foreign authors, acute appendicitis happens in 0,7–1,2% of cases among the pregnant. Frequency of this pathology equals from 1:700 to 1:3000 and has no trend to a decrease. Anatomic shift of appendix upwards and to the external tissues together with blindgut that happens according to an increasing period of alvus pregnancy, tendency to astriction that results in stagnation of bowel content and increase in flora virulence, hormonal shifts leads to degradation of immunity, and these are factors that provide for a heavy flow of appendicitis, especially in the second part of pregnancy. In 4–6% of cases it all leads to complications: termination of pregnancy and death of embryo. Acute appendicitis can happen at any period of pregnancy, simple (catarrhal) and destructive (phlegmonous, gangrenous, and perforative) forms of appendicitis are distinguished, the latter result in peritonitis. On the whole,  $\frac{3}{4}$  of all observations happen in the first part of pregnancy. Most frequently appendicitis happen in the I (9–32%) and II trimester (44–66%) of pregnancy, more rarely – in the III (15–16%) trimester and post-birth period (6–8%). Clinic of acute appendicitis in the first trimester of pregnancy flows regularly in 25% of cases. However, diagnostic might be complicated because symptoms such as astriction, dizziness, vomiting that are typical for condition of pregnancy, cannot be considered as appendicitis in the 1st and the 2nd part of pregnancy.

Vomiting has no significance as it is usual for pregnancy in general. During palpation of an overgrown stomach according to period of pregnancy it is necessary to consider localization of worm-life sprout that moves upwards along with growth of alvus. In the 2nd part of pregnancy pains can happen not only in the right iliac area, but significantly higher, therefore, other symptoms of abdominal sensation: (defans), Schetkin-Blumberg, Voskresenskiy, etc. These and other symptoms of abdominal sensation are not typical for the pregnant or are not clearly expressed due to the tension of abdominal wall and tension of alvus ligaments. Pains begin in epigastrium (symptom of Kocher) with a gradual shift towards the place of localization of worm-like sprout (symptom of Volkovich) and happen in 1:4. When a patients lays on their left side: due to a certain shift of alvus to the left it is possible to feel out the area of worm-like sprout in detail and reveal symptom of Bartomier-Michelson. Intensification of pain in the right side can be caused by pressure of the pregnant alvus upon the area of inflammation. Pain in the right iliac area emerges – in the lower parts of stomach and higher, right up to the right hypochondrium, depending on degree of sprout shift by alvus and its anatomic location in stomach cavity. For the 2nd part of pregnancy symptoms of Obrastsov and Bartomier-Michelson are typical. Temperature reaction is less expressed than among regular patients, in other words, no rectal temperature (symptom of Krause) is observed. L-cytosis up to  $12 \times 10^9/l$  can be observed among the pregnant. Expressions of acute appendicitis clinic is mostly dependent on pathological alterations in sprout. It should be considered that all symptoms can be unexpressed and take place lately. Development of peritonitis often happens in later periods of pregnancy, as conditions of limiting inflammation process degrade in stomach cavity. In case of peritonitis development pulse and body temperature increase, vomiting becomes more frequent, abdominal distention, short breath emerge. During differential diagnostics it is necessary to distinguish appendicitis and not only expressions of pregnancy, but also such diseases as pyelonephritis, urolithiasis, cholecystitis, enterodinia, gastritis, nutritional intoxication. Expressions of appendicitis can also be recognized as such pregnancy complications as late gestosis, threat of pregnancy termination, premature separation of placenta. Laboratory pregnancy tests allow specialists to establish diagnosis of acute appendicitis in 78% of cases, and also decrease frequency of surgical complications by 2, premature birth – by 1,35. Nowadays diagnostics of acute appendicitis among the pregnant is mostly carried out via such methods as ultrasound examination, modern doppler examination of bloodflow in worm-like sprout and laparoscopy at early stages of pregnancy. According to a number of authors (I.P. Korkan, 1991; Ayub J., 1992; Halverson A.C., and co-authors, 2008), obstetric and surgical complications after appendectomy among the pregnant happen only in 17% of