POŠTEDNI HIRURŠKI TRETMAN NEKROZE ŠAVA NA UTERUSU NAKON CARSKOG REZA – PRIKAZ SERIJE SLUČAJEVA

PREGLEDNI RAD

CASE REPORT

UTERUS-SPARING SURGICAL TREATMENT OF SUTURE NECROSIS AFTER CAESAREAN SECTION - CASE SERIES REPORT

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SAŽETAK

Uvod: Porođaj carskim rezom (CR) čini oko 32% svih porođaja u svetu, a može biti povezan sa ranim i kasnim komplikacijama. Iako nekroza šava na uterusu posle porođaja nije često stanje, povezana je sa visokim morbiditetom i mortalitetom porođenih žena, kao i trajnim gubitkom fertiliteta. U ovom radu prikazujemo sedam uspešno konzervativno tretiranih pacijentkinja sa dijagnozom nekroze šava na uterusu, u puerperijumu, posle carskog reza.

Prikaz serije slučajeva: Prikazujemo 12 pacijentkinja kod kojih se, u periodu od 01. 2. 2019. do 10. 11. 2022. godine, na Klinici za ginekologiju i akušerstvo Univerzitetskog kliničkog centra Srbije (KGA, UKCS), nakon carskog reza, javila infekcija i postavljena je klinička sumnja na postojanje nekroze šava na uterusu. Od ukupnog broja pacijentkinja kod kojih je dijagnostikovana nekroza šava na uterusu, sedam pacijentkinja je uspešno konzervativno tretirano.

Zaključak: Poštedni hirurški tretman nekroze šava na uterusu predstavlja moguću alternativu standardnom lečenju, koja omogućava očuvanje fertiliteta kod pacijentkinja koje nisu završile reprodukciju.

Ključne reči: nekroza šava uterusa, carski rez, infekcija, konzervativni tretman, fertilitet

ABSTRACT

Introduction: Delivery by caesarean section (CS) accounts for approximately 32% of all deliveries worldwide, and it may be associated with early and late complications. Although postpartum uterine suture necrosis is not a common condition, it is associated with high morbidity and mortality in puerperal women, as well as permanent loss of fertility in these patients. In this article, we present seven patients successfully treated conservatively, who were diagnosed with uterine suture necrosis, during puerperium, after caesarean section.

Case series report: We present 12 female patients in whom, in the period between February 1, 2019 and November 10, 2022, infection occurred after caesarean section was performed at the Clinic for Gynecology and Obstetrics of the University Clinical Center of Serbia (CGO, UCCS), and clinical suspicion of the presence of uterine suture necrosis arose. Of the total number of patients diagnosed with uterine suture necrosis, seven patients were successfully treated conservatively.

Conclusion: The uterus-sparing surgical treatment approach to uterine suture necrosis is a possible alternative to standard treatment, which may allow fertility preservation in patients who have not completed reproduction.

Keywords: uterine suture necrosis, caesarean section, infection, conservative treatment, fertility

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UVOD

Porođaj carskim rezom (CR) je jedna od najčešćih velikih akušerskih operacija i čini oko 32% svih porođaja u svetu. Kao i kod svih hirurških zahvata, CR može biti povezan sa ranim i kasnim komplikacijama. One uključuju krvarenje, infekciju rane, endometritis, nekrozu šava na uterusu i postpartalnu histerektomiju, u kratkom roku, kao i dugoročne probleme kao što su poremećaji placentacije u narednim trudnoćama, hronični bol zbog prisustva priraslica u maloj karlici, te menstrualni poremećaji [1,2].

Nekroza šava na uterusu posle porođaja nije često stanje. Njena učestalost je između 0,06% i 3,8% [2]. Povezana je sa visokim morbiditetom i mortalitetom porođenih žena, pre svega zbog razvoja intraabdominalnih infektivnih procesa i sistemskog inflamatornog odgovora, a standardni pristup lečenju podrazumeva histerektomiju [1, 2]. Ovo predstavlja poseban problem kada se radi o mladim pacijentkinjama koje žele da očuvaju fertilitet.

Nekroza šava na uterusu zahteva multidisciplinarni pristup i, u zavisnosti od težine kliničke slike, moguć je poštedni hirurški pristup (debridman rane i ponovno ušivanje reza na uterusu) ili radikalni hirurški pristup (histerektomija) [2,3].

U ovom radu prikazujemo sedam uspešno konzervativno tretiranih pacijentkinja sa dijagnozom nekroze šava na uterusu, u puerperijumu, posle carskog reza.

PRIKAZ SERIJE SLUČAJEVA

Na Klinici za ginekologiju i akušerstvo Univerzitetskog kliničkog centra Srbije (KGA, UKCS), u periodu od 01. 2. 2019. do 10. 11. 2022. godine, hospitalizovano je 12 pacijentkinja kod kojih se nakon carskog reza javila infekcija i kod kojih je postavljena klinička sumnja na postojanje nekroze šava na uterusu. Od ukupnog broja pacijentkinja kod kojih je dijagnostikovana nekroza šava na uterusu, sedam pacijentkinja je uspešno tretirano poštedno (Tabela 1), dok je kod ostalih pet pacijentkinja učinjena totalna klasična histerektomija, uz konzervaciju jajnika.

Prosečna starost pacijentkinja je bila 32,4 godine (najmlađa pacijentkinja imala je 21 godinu, dok je najstarija imala 49 godina). Carski rezovi kod svih sedam pacijentkinja, kod kojih je nekroza šava na uterusu tretirana poštedno, učinjeni su na Klinici za ginekologiju i akušerstvo Univerzitetskog kliničkog centra Srbije, od čega je pet bilo hitno (zbog prevremenog odlubljivanja posteljice i razvoja fetalne asfiksije) dok su ostala dva bila elektivna (gde su indikacije bile blizanačka trudnoća i stanje nakon carskog reza). Klinička slika puerperalne infekcije u prikazanoj seriji se najranije pojavila drugog, a najkasnije šesnaestog postoperativnog

INTRODUCTION

Cesarean section (CS) is one of the most common major obstetric operations and accounts for approximately 32% of all deliveries worldwide. As with all surgical procedures, CS can be associated with early and late complications. These include bleeding, wound infection, endometritis, uterine suture necrosis, and postpartum hysterectomy, in the short term, as well as long-term problems such as placentation disorders in subsequent pregnancies, chronic pelvic pain stemming from adhesions in the lesser pelvis, as well as menstrual disorders [1,2].

Uterine suture necrosis after CS is not a common condition. Its frequency is between 0.06% and 3.8% [2]. It is associated with high morbidity and mortality of puerperal women, primarily due to the development of intra-abdominal infection and systemic inflammatory response. The standard treatment is hysterectomy, which represents a problem in young female patients who want to preserve their fertility [1,2].

Uterine suture necrosis requires a multidisciplinary approach and, depending on the severity of the clinical presentation, a uterus-sparing (debridement of the wound and re-stitching of the incision on the uterus) or a radical surgical approach (hysterectomy) is possible [2,3].

In this article we present seven female patients with a diagnosis of uterine suture necrosis, in puerperium, after caesarean section, who were successfully treated conservatively.

CASE SERIES REPORT

At the Clinic for Gynecology and Obstetrics of the University Clinical Center of Serbia (CGO, UCCS), in the period between February 1, 2019 and November 10, 2022, 12 patients who developed an infection after cesarean section and had a clinical suspicion of uterine suture necrosis were hospitalized. Out of the total number of patients diagnosed with uterine suture necrosis, seven patients were successfully treated sparingly (Table 1), while the remaining five patients underwent total classic hysterectomy with preservation of the ovaries.

The average age of the patients was 32.4 years (the youngest patient was 21 years old, while the oldest was 49 years old). Caesarean sections in all seven patients whose uterine suture necrosis was treated with a uterus-sparing procedure were performed at the CGO of the UCCS, of which five were emergency procedures (due to premature detachment of the placenta and development of fetal asphyxia), while the other two were elective procedures (in which the indications were twin pregnancy and condition after CS). The clinical presentation of puerperal infection in the described patients

Tabela 1. Prikazi slučajeva poštedno tretiranih pacijentkinja

	Godine starosti	Trudnoća po redu	Carski rez	Pojava prvih simptoma (postoperativni dan)	Klinička slika	Dijagnostika	Bris uterusa nakon relaparotomije
PS 1	23	Druga	Elektivan	Drugi	Tipična	UZ, CT	E. coli
PS 2	34	Druga	Hitan	Treći	Tipična	UZ	E. coli
PS 3	49	Prva	Hitan	Treći	Atipična	UZ, CT	Sterilan
PS 4	21	Prva	Hitan	Dvanaesti	Tipična	UZ	E. coli i koagulaza negativan Staphylococcus
PS 5	30	Prva	Elektivan	Peti	Tipična	UZ	MRSA
PS 6	28	Prva	Hitan	Drugi	Tipična	UZ	Sterilan
PS 7	42	Prva	Hitan	Četvrti	Tipična	UZ, CT	E. coli

PS – prikaz sličaja; tipična klinička slika - porast serumskog nivoa CRP-a, povišena telesna temperatura, tahikardija i abdominalni bol uz poremećaj crevne peristaltike; atipična klinička slika – hematom na mestu reza na uterusu; sterilan – konvencionalnim mikrobiološkim metodama nije identifikovan uzročnik infekcije

dana. Kod jedne pacijentkinje, zbog intraoperativnog krvarenja, učinjena je *B-Lynch* sutura uterusa. Pet od sedam pacijentkinja nije imalo prethodne trudnoće.

Kod šest pacijentkinja klinička slika se manifestovala tipičnim znacima i simptomima u vidu povišenih parametara inflamacije (porast serumskog nivoa CRP-a, povišena telesna temperatura, tahikardija) i abdominalnim bolom uz poremećaj crevne peristaltike. Kod sedme pacijentkinje klinička slika se razvijala u vidu hematoma na mestu reza na uterusu, sa posledičnim niskim vrednostima hemoglobina (vrednost hemoglo-

appeared on the second postoperative day, at the earliest, and on the sixteenth postoperative day, at the latest. Only in one patient, due to intraoperative bleeding, the B-Lynch uterine suture was performed. Five of the seven patients had no previous pregnancies.

In six patients, the clinical presentation manifested with typical signs and symptoms of infection in the form of elevated inflammation parameters (increased serum CRP level, elevated body temperature, tachycardia) and abdominal pain with intestinal peristaltic disorder. In the remaining patient, the clinical presen-

Table 1. Case reports of sparingly treated patients

	Age	*Pregnancy*	*Caesarean section*	*Postoperative day when first symptoms occurred*	*Clinical presentation (symptoms)*	*Diagnostics*	*Uterine swab after second surgical procedure*
CR 1	*23*	*Second*	*Elective*	*Second*	*Typical*	*US, CT*	*E. coli*
CR 2	*34*	*Second*	*Emergency*	*Third*	*Typical*	*US*	*E. coli*
CR 3	*49*	*First*	*Emergency*	*Third*	*Atypical*	*US, CT*	*Sterile*
CR 4	*21*	*First*	*Emergency*	*Twelfth*	*Typical*	*US*	*E. coli and coagulase-negative staphylococcus*
CR 5	*30*	*First*	*Elective*	*Fifth*	*Typical*	*US*	*MRSA*
CR 6	*28*	*First*	*Emergency*	*Second*	*Typical*	*US*	*Sterile*
CR 7	*42*	*First*	*Emergency*	*Fourth*	*Typical*	*US, CT*	*E. coli*

CR – case report; typical clinical presentation - increase in serum CRP level, increased body temperature, tachycardia, and abdominal pain with disturbance of intestinal peristalsis; atypical clinical presentation – hematoma at the incision site on the uterus; sterile – the causative agent of the infection was not identified by conventional microbiological methods

bina najpre 103 g/L, zatim se nakon 36 časova uočava pad na 75 g/L), što je rezultiralo nadoknadom četiri doze koncentrovanih eritrocita odgovarajuće krvne grupe.

Kod svih pacijentkinja je transvaginalnom i transabdominalnom ultrasonografijom vizualizovano odstupanje od normalnog nalaza za odgovarajući postpartalni dan, u smislu postojanja slobodne tečnosti u maloj karlici, hematoma (formacije mešovite ehogenosti) u predelu reza na uterusu ili slike istanjenog zida uterusa u predelu reza. Kod tri pacijentkinje je kompjuterizovanom tomografijom (engl. *computed tomography – CT*) verifikovana dehiscencija reza na uterusu.

Kod četiri pacijentkinje je mikrobiološkim analizama (bris lohija i/ili bris uterusa) izolovana *Escherichia coli*, kod jedne pacijentkinje je izolovan meticilin rezistentni *Staphylococcus aureus* (engl. *methicillin-resistant Staphylococcus aureus – MRSA*), dok kod dve pacijentkinje konvencionalnim mikrobiološkim metodama nije identifikovan uzročnik infekcije.

Nakon pogoršanja opšteg stanja u postoperativnom toku nakon carskog reza, sve pacijentkinje su konzilijarno pregledane i doneta je multidisciplinarna odluka da se kod šest pacijentkinja učini relaparotomija i postupi po nalazu, dok je kod jedne pacijentkinje odlučeno da se tretman nastavi polivalentnom antibiotskom terapijom, uz intenzivni nadzor. Kod dve pacijentkinje, odluka o operativnom zahvatu, kao i sam operativni zahvat, učinjeni su tokom prvog postoperativnog dana (24 – 48 h), kod druge dve pacijentkinje zahvati su izvršeni drugog postoperativnog dana (48 – 72 h), dok se kod preostale tri pacijentkinje radilo o četvrtom, petom i dvanaestom postoperativnom danu.

Zbog starosnog doba pacijentkinja i njihove želje za očuvanjem fertiliteta, kod šest pacijentkinja je doneta odluka da se pokuša poštedni hirurški tretman umesto histerektomije, te je učinjen debridman i resutura rane na uterusu (kao i evakuacija opisanih hematoma kod jedne pacijentkinje). Jedna pacijentkinja je tretirana konzervativnom terapijom (antibiotskom i suportivnom terapijom, uz intenzivni nadzor). Kod preostalih pet pacijentkinja tretiranih zbog infekcije u puerperijumu, doneta je odluka da se učini histerektomija, uz konzervaciju jajnika. Odluka o radikalnom tretmanu (histerektomija) doneta je zbog teže forme sistemskog inflamatornog odgovora, lošijeg početnog odgovora na primenjenu terapiju i zbog opsežnijeg oštećenja uterusa nekrozom i infekcijom.

Intraoperativno je kod pet prikazanih pacijentkinja utvrđeno postojanje fibrinskih naslaga na mestu reza na uterusu, uterus razmekšane konzistencije, mestimično nekrotičnih delova šava, priraslice genitalnih organa sa parijetalnim peritoneumom i sigmoidnim delom

tation developed in the form of a hematoma at the uterine incision site, with consequent low hemoglobin values (hemoglobin value 103 g/L, then after 36 hours a drop to 75 g/L was observed), which resulted in the replacement of four doses of concentrated erythrocytes of the appropriate blood group.

In all patients, transvaginal and transabdominal ultrasonography visually confirmed a deviation from the normal findings for the corresponding postpartum day, such as the presence of free fluid in the pelvis, hematoma (a formation of mixed echogenicity) in the area of the incision on the uterus, or a thinned uterine wall in the area of the incision. In three patients, dehiscence of the incision on the uterus was verified with computed tomography (CT).

Microbiological analyses (lochia swab and/or uterine swab) showed that Escherichia coli was isolated in four patients, methicillin-resistant Staphylococcus aureus (MRSA) was found in one patient, while, in two patients, the causative agent of infection was not identified with conventional microbiological methods.

Once the general health status of the patients during the early postoperative course after caesarean section started to deteriorate, all of them were examined, and a multidisciplinary decision was made to perform a relaparotomy and to proceed according to the findings, in six patients, while, in one patient, it was decided to continue the treatment with polyvalent antibiotic therapy, with intensive monitoring. In two patients, the decision to undergo surgery was made and the surgery itself was performed on the first postoperative day (within 24 – 48 h); in two other patients this was done on the second postoperative day (48 – 72 h), while it was the fourth, fifth and twelfth postoperative day, for the remaining three patients.

Due to the age of the patients and their desire to preserve fertility, in six patients the decision was made to try uterus-sparing surgical treatment instead of hysterectomy, and debridement and resuturing of the uterine wound was performed (as well as evacuation of the described hematomas in one patient). One patient was treated with conservative therapy (antibiotic and supportive therapy, with intensive monitoring). In the five remaining patients treated for infection during puerperium, the decision was made to perform hysterectomy, with preservation of the ovaries. The decision on radical treatment (hysterectomy) was made due to a more severe form of the systemic inflammatory response, a worse initial response to the application of therapy, and more extensive damage of the uterus by necrosis and infection.

Intraoperatively, in five patients, the presence of fibrin deposits at the site of the uterine incision was

kolona, kao i prisustvo zamućene slobodne tečnosti u maloj karlici. Nasuprot tome, kod dve pacijentkinje je konstatovan drugačiji nalaz. Kod jedne pacijentkinje je konstatovano postojanje hematoma u predelu pravih trbušnih mišića i reza uterusa uz nekrotično izmenjen šav. Preostala pacijentkinja nije operativno lečena.

Nakon reoperacije, postoperativni tok svih pacijentkinja je protekao bez daljih kliničkih komplikacija. Pacijentkinje su lečene polivalentnom antibiotskom terapijom, uz intenzivni nadzor. Najkraća dužina hospitalizacije, kod poštedno hirurški tretiranih pacijentkinja, bila je 11 dana, dok je kod preostalih pet pacijentkinja bila preko 20 dana, a najduža je iznosila 33 dana. Pacijentkinja koja nije reoperisana je lečena u hospitalnim uslovima tokom 28 dana. Nakon uspešnog konzervativnog tretmana, pacijentkinje su otpuštene u dobrom opštem stanju i, nakon prve kontrole od strane hirurga, praćene su na nivou primarne zdravstvene zaštite.

DISKUSIJA

U ginekologiji i akušerstvu, nekroza šava na uterusu posle carskog reza je značajan problem, jer je povezana sa povećanim morbiditetom i mortalitetom porodilja i gubitkom reproduktivne funkcije. Prema studiji koju su sproveli Al Šahed i saradnici, ovakva vrsta komplikacija nakon carskog reza predstavlja veliki klinički izazov u dijagnostici i daljem lečenju, pre svega zbog nespecifične simptomatologije. Najčešće prijavljene kliničke slike bile su u vidu povišene telesne temperature, abdominalnog bola, povišenih parametara zapaljenja, kao i sepse, što se podudaralo sa kliničkim slikama prikazanih pacijentkinja [4]. U prikazanoj seriji slučajeva, za utvrđivanje postojanja patološkog procesa u predelu reza na uterusu bio je dovoljan sonografski pregled karlice, dok je kod većine drugih autora učinjeno MR i *CT* snimanje u cilju dijagnostike [2,4,5]. Imajući u vidu da se u većini opisanih slučajeva radilo o pacijentkinjama u reproduktivnom životom dobu, nekroza šava na uterusu uspešno je tretirana poštedno, jer je lokalni intraoperativni nalaz dozvoljavao mogućnost rekonstrukcije uterusnog zida. U literaturi postoji malo podataka o uspešnom poštednom tretmanu nekroze šava nakon carskog reza, dok standardni pristup podrazumeva histerektomiju [2,4,6].

S obzirom da su sve pacijentkinje ispoljavale kliničku sliku abdominalne infekcije, lečene su polivalentnom antibiotskom terapijom, pre i nakon relaparotomije. Smatra se da dobru prognozu imaju pacijentkinje kod kojih je ranije započeta antibiotska terapija širokog spektra, uz multidisciplinarni pristup, intenzivno praćenje i prisustvo manje udruženih komplikacija i komorbiditeta [4,7]. Kao najčešći uzročnici infekcije rane spominju se *S. aureus*, *Klebsiella pneumoniae* i *E.*

noted, the uterus was softer than normal, there were partially necrotic sections of the suture, there were adhesions between the genital organs and the parietal peritoneum and the sigmoid colon, and finally, the presence of turbid free fluid in the pelvis was noted. In contrast, a different finding was noted in two patients. In one patient, the presence of a hematoma in the region of the rectus abdominis muscles and the incision of the uterus, with a necrotic suture, was noted. The one remaining patient was not treated operatively.

After reoperation, the postoperative recovery of all patients was without further clinical complications. The patients were treated with polyvalent antibiotic therapy, with intensive monitoring. The shortest length of hospitalization in sparingly surgically treated patients was 11 days, while in the remaining five patients, it was more than 20 days, and the longest was 33 days. The patient who did not undergo reoperation was treated in-hospital for 28 days. After successful conservative treatment, the patients were discharged in good general health and, after the first check-up was performed by the surgeon, they were later followed up at the primary health care level.

DISCUSSION

In gynecology and obstetrics, uterine suture necrosis after caesarean section is a significant problem because it is associated with increased morbidity and mortality of puerperal women and their loss of reproductive function. According to Al Shahed et al, this type of complication after caesarean section poses a major clinical challenge in diagnosis and further management, mainly because of its nonspecific symptomatology. The most reported clinical symptoms were in the form of increased body temperature, abdominal pain, elevated inflammatory parameters, and sepsis, which was consistent with the clinical symptoms of the presenting patients [4]. In the presented series of cases, a sonographic examination of the pelvis was sufficient to determine the existence of a pathological process in the area of the uterine incision, while most of the other authors report that MR and CT were performed for the purpose of diagnosis [2,4,5]. Considering the fact that in most of the described cases the patients were of reproductive age, uterine suture necrosis was successfully treated conservatively, as the local intraoperative findings allowed reconstruction of the uterine wall. There are few data in literature on successful conservative treatment of suture necrosis after caesarean section, while the standard approach is hysterectomy [2,4,6].

Given that all patients presented with abdominal infection, they were treated with polyvalent antibiotic

coli. Kod prikazanih pacijentkinja, u brisu uterusa, u najvećem broju je izolovana upravo *E. coli*, a kod jedne pacijentkinje je izolovan *S. aureus* [8]. Kod jedne od pacijentkinja, kod koje se klinička slika nekroze šava na uterusu javila drugog postoperativnog dana, u brisu uterusa je izolovana *E.coli* u velikom broju, što može biti u uzročnoj vezi sa nastankom nekroze šava na uterusu. Kod druge pacijentkinje, kod koje su se simptomi pojavili drugog postoperativnog dana, nije izolovan uzročnik infekcije, dok je dijagnoza nekroze šava postavljena na reoperaciji.

U analiziranoj seriji slučajeva, kod pacijentkinje čiji je rani postoperativni tok komplikovan primarno razvojem kliničke i ultrasonografske slike hematoma uterusa na mestu carskog reza, nije uočena drugačija dinamika pada nivoa hemoglobina u krvnoj slici, u odnosu na ostale prikazane pacijentkinje. Ovo može biti posledica malog broja slučajeva ili dosta širokog opsega (500 – 1.000 ml) procenjenog gubitka krvi tokom carskog reza.

Plasiranje *B-Lynch* šava u toku carskog reza povezano je sa većom stopom pojave nekroze šava na uterusu i, posledično, postpartalne histerektomije [9]. U prikazanoj seriji

slučajeva, kod jedne pacijentkinje sa blizanačkom trudnoćom, tokom carskog reza, zbog obilnijeg intraoperativnog krvarenja i hipotonije uterusa, odlučeno je da se suture pojačaju kompresivnim šavovima po *B-Lynch*-u. Tokom trećeg postoperativnog dana, zbog pogoršanja opšteg stanja pacijentkinje, održavanja niskih vrednosti parametara koagulacije, a uprkos nadoknadi koncentrovanih eritrocita (četiri doze), kao i ginekološkog i ultrazvučnog nalaza koji je ukazivao na postojanje jasno ograničenog tumefakta koji bi mogao da odgovara hematomu, odlučeno je da se iz vitalnih indikacija učini relaparotomija i postupi po nalazu. Intraoperativno je pokazano postojanje nekroze šava na uterusu, koja je nastala na terenu inflamiranog hematoma.

Jedan od inovativnih terapijskih pristupa tretmanu defekata na uterusu i posledičnog peritonitisa predstavlja intrauterina terapija negativnim pritiskom (engl. *intrauterine negative-pressure therapy – IU-NPT*). Negativan pritisak imitira lokalni debridman, potom smanjuje lokalni edem, sprečava bakterijsku kontaminaciju i služi za dreniranje sekreta iz rane, podsticanje protoka krvi i stimulisanje regeneracije tkiva [10].

ZAKLJUČAK

Nekrozu šava na uterusu je važno imati na umu, kao jednu od diferencijalnih dijagnoza simptoma intraabdominalnih infekcija u puerperijumu nakon carskog reza, pre svega jer je povezana sa većim morbiditetom

therapy, before and after relaparotomy. Patients previously started on broad-spectrum antibiotic therapy, with a multidisciplinary approach, intensive surveillance, and the presence of minor concomitant complications and comorbidities are considered to have a good prognosis [4,7]. S. aureus, Klebsiella pneumoniae, and E. coli are reported as the most common causes of wound infections. In the presented patients, in most uterine swabs, E. coli was isolated, while S. aureus was isolated in the uterine swab of one patient [8]. In one of the patients, in whom the clinical presentation of uterine suture necrosis developed on the second postoperative day, a large number of E. coli was isolated from the uterine swab, which may be causally related to the occurrence of uterine suture necrosis. In the second patient, whose symptoms appeared on the second postoperative day, the causative agent of the infection was not isolated, while the diagnosis of suture necrosis was made at reoperation.

In the analyzed series of cases, in the patient whose early postoperative recovery was complicated primarily by the development of clinical and ultrasonographic presentation of uterine hematoma at the site of the caesarean section, no difference in the dynamics of the drop in hemoglobin levels in the blood count was observed, as compared to the other patients presented. This may be due to the small number of cases or the rather wide range (500 – 1,000 ml) of estimated blood loss during caesarean section.

Placement of a B-Lynch suture during cesarean section is associated with a higher rate of uterine suture necrosis and, consequently, postpartum hysterectomy [9]. In the presented series of cases, in one patient with a twin pregnancy, during cesarean section, it was decided to reinforce the sutures with B-Lynch compression sutures, due to profuse intraoperative bleeding and uterine hypotonia. During the third postoperative day, because of the deterioration of the patient's general health status, the maintenance of low values of coagulation parameters despite the compensation of concentrated erythrocytes (four doses), as well as due to the gynecological examination and ultrasound findings indicating the existence of a clearly delineated swelling corresponding to a hematoma, it was decided to perform a relaparotomy, based on vital indications, and to proceed according to the findings. Intraoperatively, the presence of uterine suture necrosis, which occurred in the area of the inflamed hematoma, was demonstrated.

One of the innovative therapeutic approaches to treating uterine defects as well as the resulting peritonitis is intrauterine negative pressure therapy (IU-NPT). Negative pressure mimics local debridement, it reduc-

i mortalitetom porodilja. Multidisciplinarni pristup, uz radiološku dijagnostiku, od velike je pomoći u postavljanju dijagnoze. Histerektomija predstavlja definitivno hirurško lečenje, ukoliko se stanje pacijentkinje intenzivno pogoršava.

Poštedni pristup u vidu hirurške rekonstrukcije uterusnog zida, može biti jedna od opcija, kada to dozvoljavaju opšte stanje pacijentkinje i lokalni intraoperativni nalaz, a u cilju pokušaja očuvanja fertiliteta kod pacijentkinja koje nisu završile reprodukciju.

Sukob interesa: Nije prijavljen.

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es local edema, prevents bacterial contamination, and serves to drain secretions from the wound, stimulate blood flow, and stimulate tissue regeneration [10].

CONCLUSION

Uterine suture necrosis must be considered as a possible differential diagnosis after the onset of the first symptoms of intra-abdominal infection, in puerperium, after a caesarean section, mainly because it is associated with higher morbidity and mortality in puerperal women. A multidisciplinary approach, together with radiological diagnostics, is of great help in establishing the diagnosis. Hysterectomy is the definitive surgical treatment, if the patient's condition deteriorates severely.

A uterus-sparing approach, in the form of surgical reconstruction of the uterine wall, can be one of the options when the patient's general health status and local intraoperative findings allow it, for the purpose of attempting to preserve fertility in female patients who have not completed reproduction.

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