Available online at www.ijmrhs.com

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2021, 10(S1): 1-8

Case report of uterine necrosis after cesarean section

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ABSTRACT

Uterine necrosis is very rare condition. It is known in the literature as a rare post uterine artery embolization complication. By reviewing the literature, a limited data found for such an extreme rare condition post caesarian section complicated by uterine necrosis. Clinical diagnosis, radiological diagnosis and treatment. Uterine necrosis is considered as clinical dilemma. Multidisciplinary team is the key role in such a case. Conservative management still one of the options in the treatment. But according the patient condition a surgical intervention with hysterectomy is a lifesaving procedure.

Keywords: Uterine necrosis, Hysterectomy, Hydronephrosis, Multidisciplinary.

INTRODUCTION

Uterine necrosis post-partum is a very rare condition. Upon reviewing the literatures, the most of the reported cases were after intervention procedure. After pelvic arterial embolization [1] for post-partum hemorrhage, uterine artery embolization [2] or of B–Lynch sutures. There was only one case report on December 2016 with the same clinical scenario [3]. Patient came with delayed myometrium necrosis is reported in post-cesarean patient where no embolization or uterine compression sutures have been applied. Patient presented with foul smelling discharge from the gaped abdominal wound following caesarean section. Abdomen was closed after exploration and lavage. Patient did not have complete healing and area of unhealed wound remained through which sub involute uterus was peeping out. Patient was taken for re-suturing again but the uterus was found to be completely necrotic and hysterectomy was performed. After that Patient responded to treatment [3].

Proceeding to exploratory laparotomy, multidisciplinary team approach and lifesaving hysterectomy can help to stabilize the patient and discharged with good outcome. Moreover, Additional complication happened to this patient post-operative PE, DVT and acute renal failure. Although factor V Leiden not detected.

LITERATURE REVIEW

23 years old female P1+0 post caesarean section done on 9 December 2018 in peripheral hospital with gestational age 38 weeks Due to severe preeclampsia under spinal Anastasia. On day 2 post-operative patients admitted to intensive care unit as patient due to sever hypoxia and haemorrhage. After that patient start to have abdominal distension. On day 4 post-operative she had midline incision exploratory laparotomy with a diagnosis of bowel obstruction taken by the general surgery. Intra operative there were multiple blood clots irrigation and suction done no clear sores of bleeding or sign of bowel obstruction. Drain was placed under suction and abdomen closed. As the patient condition did not improve, she was transferred to another hospital in the same area with high facility. But patient condition not improved.

On day 21 post cesarean section patient was transferred to security forces hospital Riyadh admitted to ICU directly patient was intubated with Glasgow Coma scale is 10t out of 15. With vitals blood pressure is 120/77, pulse is 80, respiratory rate is 20, oxygen saturation is 99% and temperature is 37°C patient was on mechanical ventilation and she was on need of one inotrops. Laboratory work up sent for the patient with septic work up and came with HB is 92 g/L, WBC is 14 (10 × 9/L) with band neutrophils 9%. Urea is 18.7(mmol/L) and creatinine is 107 (nmol/L) and Normal liver function test.

Stabilization was done to the patient with IV fluid and blood transfusion and antibiotic vancomycin 1 g intra venous every 12 hours. Then Consultations were done to Obstetrics and gynecology and General surgery. Echo done with EF 58%. CT abdomen done and showed disturbed anatomy with enlarged uterus with feature of large hematoma size 17 × 12 × 16 cm collection replacing or masking the uterus and suggested for ultrasound.

Bedside scan done and showed Postpartum anteverted uterus measuring 154 × 105 × 142 mm. Midline endometrial thickness=33 mm with collection seen could be blood hematoma. Both ovaries are not seen well. There is no free fluid within the POD. A collection is seen anterior to the uterus measuring 85 × 39 mm.

UPPER ABDOMEN US SHOWED

Free fluid noted in the Morison's pouch at the inferior border of the liver and in the right lower quadrant. Echogenic foci noted in the gallbladder with high suspicion of Stones. Common bile duct appears prominent measuring 0.5 cm. Both kidneys are of normalize with mild increase in parenchymal echogenicity. No hydronephrosis seen.

REPEATED CT AFTER 6 DAYS

The uterus is significantly distended with distorted outline and thin wall. The uterus is filled with fluid attenuation. A pocket of air in the dependent portion noted.

As the case was critical with unusual presentation a plan was taken to be managed by multidisciplinary team. Multidisciplinary team meeting was held with Anastasia, obstetrics and gynaecology, gynaecology intervention radiology and general surgery.

No contrast extravasation noted to suggest active bleeding. By reviewing the picture again with senior radiologist there was a hematoma.

Intervention radiology was consulted for evacuated under ultrasound guidance after stopping the enoxaparin. Then the intervention radiology reaches to the hematoma with minimal blood clots but no pus. On day 8 of admission culture appear and it showed blood culture klebsiella pneumonia Wound culture pseudomonas aeruginosa and Klebsiella pneumonia and were resistant to amikacin Urine culture showed klebsiella pneumonia sensitive to amikacin and also actinobacterium which was sensitive to colistin.

Then patient seen with the general surgery with impression of gallbladder stone and they advise to repeat the US. US repeated unremarkable. On day 14 of admission patient had dropped on oxygen saturation reaching to 80% as patient had high kidney and liver function test. Patient could not do CT angio so she did V/Q scan high which show PE. Lung findings are suggestive of high probability of pulmonary embolism.

MRI pelvis

Markedly swelling and a large uterus with wide necrotic scar in the anterior and right wall and associated anterior diffuse sub-serosal hematoma with more collection above the fundus and another small collection in the cul-de sac Diffuse ascites. The possibility of infected hematoma, need clinical correlation. No evidence of endometrial herniation.

MRI MRCP on day 15

Cholelithiasis with mild free fluid in the abdomen. Differential diagnosis was abdominal collection, uterine collection or hematoma.

On day 15 of admission Multidisciplinary team held obstetrics and gynaecology, general surgery, ICU and colorectal team with conclusion of: No hematoma in the uterus, no surgical intervention for the time being, continue antibiotics to repeat the CT scan and follow up After 5 days of first Multidisciplinary team days another Multidisciplinary team meeting held: CT with MRI reviewed again by a senior radiologist and with the help of external senior radiologist who is specialized in women's radiology. As a patient did ECHO and it showed ejection fraction of 22% as it was 58%.

Patient was following up with infectious disease. The patient condition was deteriorating with medical approach, the decision was taken for "exploratory laparotomy" as it may improve the patient condition, if the source of infection is released. Her situation and it may worsen her condition the family agreed for surgical intervention with high risk consent.
24 days after admission at OR started: Patient was placed on supine position. Under general Anastasia and procedure done under sterile manner. Cystoscopy was performed by the urology team and bilateral ureteric stent were inserted. A longitudinal incision was made over the previous scar, and the abdominal wall was entered at the level just above the umbilicus. The bowl was adherent to fundus of the uterus. Dissection was done and there was a collection of necrotic tissue and pus between the anterior uterine wall and the anterior abdominal wall and adherent bowl. The uterus was easily peeled and a part of the serosa was also peeled over the bowel. Dissection was continued through the midline up to the

symphysis pubis. Suction and irrigation were done multiple times to clear necrotic tissue. The uterus appeared pale without blood supply. Both ovaries and tubes were pale as well. Both ureters were identified with ureteric catheter in place.

Supra-vaginal hysterectomy was done followed by bilateral salpingo-oophorectomy using voyant system. The stump was closed with multiple stitches number 0 vicryl. hemostasis was secured. Methylene blue test was done to check the integrity of the bladder was found to be intact. The general surgery and the adhesion were released between the bowel. There were multiple areas of serosal injuries which were repaired. The unhealthy part of the jejunum was resected and anastomosis was done. The procedure performed within 4 hours and 37 minutes, estimated blood loss was 700 ml. The specimen which was obtained sent for histopathology evaluation. Before starting the procedure, the patient was on three types of inotrops. At the end of the surgery patient required only one type of inotrops. Post-operative condition patient was intubated with glasgow coma scale 8/15 and labs HB 94 g/L high creatinine is 103 (nmol/L). albumin 28 (g/l) WBC 16 (10 × 9/L) On day 1 patient condition improving lab wise her WBC 12 (10 × 9/L) HB 87 g/L creatinine 90 (nmol/L) albumin 29 (g/l) On day 2 post-operative WBC 12 (10 × 9/L) creatinine 67 (nmol/L). Urea 75 (mmol/L) on day 2 post-operative patient was extubated. Day 14 Patient had mild rectal bleeding, she was evaluated by colorectal team, and they suggest doing CT Angio. There was no active bleeding but incidentally patient found to have left Deep Venous Thrombosis (DVT). A filling defect were seen at the left common iliac, external iliac and extended to left common femoral vein. Patient case was reviewed by hematology team and they recommend to start her on warfarin 5 mg and to increase the dose till reaching the therapeutic INR range. Patient was booked for Inferior Vena Cava (IVC) filter placement as well. Patient had intensive physiotherapy. Patient was discharge home after 52 days of admission (day 73 of cesarean section) with good condition. Follow up was given with obstetrics and gynecology, general surgery and hematology.

HISTOPATHOLOGY

Uterus, bilateral ovaries and fallopian tubes, sub-total abdominal hysterectomy, bilateral salpino-oophorectomy

Uterus: Extensive transmural infarction

Endometrium: Not identified

Both fallopian tubes: No significant pathology

Right ovary: Totally infarction ovary with small rim of viable cortical necrosis

Left ovary: Edema, congestion and hemorrhagic with focal cortical necrosis

Small bowel resection: Mucosa of small bowel no significant pathology

Serosal inflammation and necrosis focally extended to submucosa

DISCHARGE PLAN

Patient seen in our clinic 6 weeks and 6 months post procedure and she were doing fine. Thrombophilia screen done and it was negative. She will continue her 5 mg warfarin as her follow up with hematology team.

DISCUSSION

We document a case of uterine necrosis after caesarian section and conduct a literature review on its causation, clinical features, and management principles. Uterine necrosis is a clinical dilemma for any clinician in its identification and management. The symptoms of uterine necrosis may be nonspecific. Most commonly the reported clinical picture includes abdominal pain, fever, leucorrhea, and menorrhagia at times Patients may also present with symptoms of sepsis if concurrent infection is present [4] imaging such as a computed tomography scan and magnetic resonance imaging may help in its diagnosis [5].

Pre-eclampsia is a multisystem disorder that complicates 3%–8% of pregnancies in Western countries and constitutes a major source of morbidity and mortality worldwide [6]. Overall, 10%–15% of maternal deaths are directly associated with preeclampsia and eclampsia [7]. Pre-eclampsia is a major cause of maternal mortality and morbidity, preterm birth, perinatal death, and intrauterine growth restriction. Unfortunately, the pathophysiology of this multisystem disorder, characterized by abnormal vascular response to placentation, is still unclear [8]. The abnormalities may be related to the nitric oxide pathway, which contributes substantially to the control of vascular tone. Moreover, inhibition of maternal synthesis of nitric oxide prevents embryo implantation. Increased uterine arterial resistance induces higher sensitivity to vasoconstriction and thus chronic placental ischemia and oxidative stress [9] oxidative stress induces release into the maternal circulation of substances such as free radicals, oxidized lipids, cytokines, and serum soluble vascular endothelial growth factor 1. These abnormalities are responsible for endothelial dysfunction 15 with vascular hyper permeability, thrombophilia, and hypertension, so as to compensate for the decreased flow in the uterine arteries due to peripheral vasoconstriction [10]. Depletion of vascular endothelial growth factor in the podocytes makes the endotheliosis more able to block the slit diaphragms in the basement membrane, adding to decreased glomerular filtration and causing proteinuria. Finally, endothelial dysfunction promotes microangiopathic haemolytic anemia, and vascular hyperpermeability associated with low serum albumin causes edema, particularly in the lower limbs or lungs [11,12].

Pregnancy and the puerperium are well-established risk factors for Venous Thromboembolism (VTE), a disease that includes Pulmonary Embolism (PE) and Deep Venous Thrombosis (DVT). Approximately 30% of apparently isolated episodes of PE are associated with silent DVT and in patients presenting with symptoms of DVT, the incidence of silent PE ranges from 40%–50% [13].

Mesenteric Venous Thrombosis (MVT) is an infrequent condition accounting for 1 in 5000 to 15,000 inpatient admissions, 1 in 1000 emergency department admissions, and 6% to 9% of all cases of acute mesenteric ischemia [14]. Venous stasis results from a hormonally induced decrease in venous tone and obstruction of venous flow by the enlarging uterus. A reduction of venous flow velocity of approximately 50% occurs in the legs by weeks 25–29 of gestation. This lasts until approximately 6 weeks postpartum, at which time normal venous velocities return [15,16] lower extremity is the most common site of DVT (82%). Anatomic reasons (compression of the left common iliac vein by the right common iliac artery which is accentuated by the enlarging uterus) have been postulated [17].

During normal pregnancy, a hypercoagulable state is initiated. This is the most important risk factor contributing to

thrombosis during pregnancy. Fibrin generation is increased, fibrinolytic activity is decreased, and levels of coagulation factors II, VII, VIII and X are all increased [18]. There is a progressive fall in protein S levels and acquired resistance to activated protein C. All of these changes reflect the physiological preparation for the hemostatic challenge of delivery. This hemostatic activation is demonstrated by increased markers of hemostatic activation, such as prothrombin fragment F1+2 and D-dimer [19].

The overall incidence of small bowl obstruction SBO after gynecological procedures is approximately 11% and 0.1% after cesarean section. The most common causes of post op SBO are adhesions and edema. Internal herniation is an uncommon etiology. Current practice includes non-closure of the parietal peritoneum post CS [20].

According to the World Health Organization (WHO), puerperal sepsis is defined as the infection of the genital tract occurring at labor or within 42 days of the postpartum period [21] report that puerperal sepsis is a second leading cause of death accounting for 26.3% of maternal deaths, while another WHO report estimated 358,000 maternal deaths yearly occurring due to child birth problems and out of these up to 15% are associated with puerperal sepsis [22]. The treatment of uterine necrosis usually involves either removal of the necrosed portion of the uterus and myomas or a hysterectomy [23,24]. Conservative management has also been described in literature as an option for a handful of patients [25]. The choice of the option of treatment largely depends upon the severity of symptoms of necrosis and associated complications. The current patient had severe abdominal pain and also had failed conservative management with antibiotics and oral analgesics, hence the decision for surgery and hysterectomy. Additional measures that seem to aid in the good outcome of such patients are the treatment of concurrent infection with broad spectrum antibiotic and multidisciplinary management in cases of adjacent organ involvement.

CONCLUSION

Uterine necrosis is an extreme rare condition but it is important to keep in mind as one of the deferential diagnoses. Still the pathophysiology is not clear. But uterine necrosis seems a thrombophilia event. Patient with pre-eclampsia, cesarean section/laparotomy and pregnancy will increase 5,4,3 folds to get venous thromboembolism respectively rather than long staying ICU and sepsis. Exploratory laparotomy plays a major role such as this condition. Counseling of the family should not be missed as patient with exploration laparotomy can end with hysterectomy. Multidisciplinary team is very helpful for reaching the diagnosis and preparing the patient for such major surgery it will facilitate prober communication and arrangement before major surgery. Hysterectomy is Therapeutic arsenal of post-partum uterine necrosis. Conservative management is considered one of the options as trying to keep the uterus for fertility purpose but hysterectomy is mandatory as lifesaving treatment as the patient condition is deteriorating and become more sever which can end by mortality. CT angoi is the gold stander for the diagnosis but because the condition of renal failure of the patient still MRI considered alternative option for the diagnosis. The definitive diagnosis is based on the histopathology report.

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